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DOE/RL 88-08

Interim Status Closure Plan 300 Area Solvent Evaporator

October 1985
Revised April 1988

Prepared by the
Westinghouse Hanford Company
for the
U.S. Department of Energy
Richland Operations Office

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1.0 INTRODUCTION

This document describes activities for the closure of a hazardous waste tank treatment facility owned by the U.S. Government and operated by the U.S. Department of Energy-Richland Operations Office (DOE-RL) and the Westinghouse Hanford Company. This treatment facility was a solvent evaporator located in the 300 Area of the Hanford Site that was managed by UNC Nuclear Industries, Inc. (UNI) on the behalf of DOE-RL from 1975 to 1985. The 300 Area Solvent Evaporator was a modified load lugger (dumpster) in which solvent wastes were evaporated. These solvents were potentially radioactively contaminated by reactor fuel material from the N Reactor Fuel Manufacturing Facility. The waste was composed of perchloroethylene, 1,1,1-trichloroethane, ethyl acetate/bromine solution, paint shop solvents and possibly some used oil. Small amounts of uranium, copper, zirconium and possibly beryllium were also present in the degreasing solvents as particulates.

The Solvent Evaporator was shut down in October 1985. Initial closure activities involving disposal of the remaining spent solvent and demolition and disposal of the Solvent Evaporator were initiated in 1985 and completed in 1986 following shutdown of the Solvent Evaporator under interim status. Because the Solvent Evaporator treated radioactive mixed wastes, onsite low-level radioactive waste burial grounds were designated to receive the remaining spent solvent and the dismantled Solvent Evaporator. Details of these activities are described in Section 3.2.

Subsequent to filing the initial November 1985 Closure Plan, Rev. 0 (Part A Application; Appendix A) for the Solvent Evaporator under interim status, it was determined that the site lies within the boundary of an inactive radioactive waste burial ground. This burial ground is included among the group of sites in, and near, the 300 Area which were used to generate scoring using the Hazardous Ranking System (HRS) for submission to the Environmental Protection Agency (EPA) as part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. The group of sites is collectively referred to as the 300 Aggregate Area Operable Units. The juxtaposition of the 300 Area Solvent Evaporator closure area and the underlying burial ground complicates closure of the Solvent Evaporator site under the Washington Administrative Codes (WAC) Dangerous Waste Regulations and EPA regulations, and also the burial ground remedial action under CERCLA. The most appropriate course of action for final closure of the Solvent Evaporator site is that it be addressed as part of the remedial action for the underlying burial ground. Justification for this proposal is presented in Section 3.3 of this closure plan. The extent of operation of the Solvent Evaporator and burial ground sites, and the known characteristics of the wastes associated with them, are presented in Sections 1.1.2 and 1.3. The remainder of this Closure Plan is presented in accordance with EPA guidelines for interim status closure plan review.

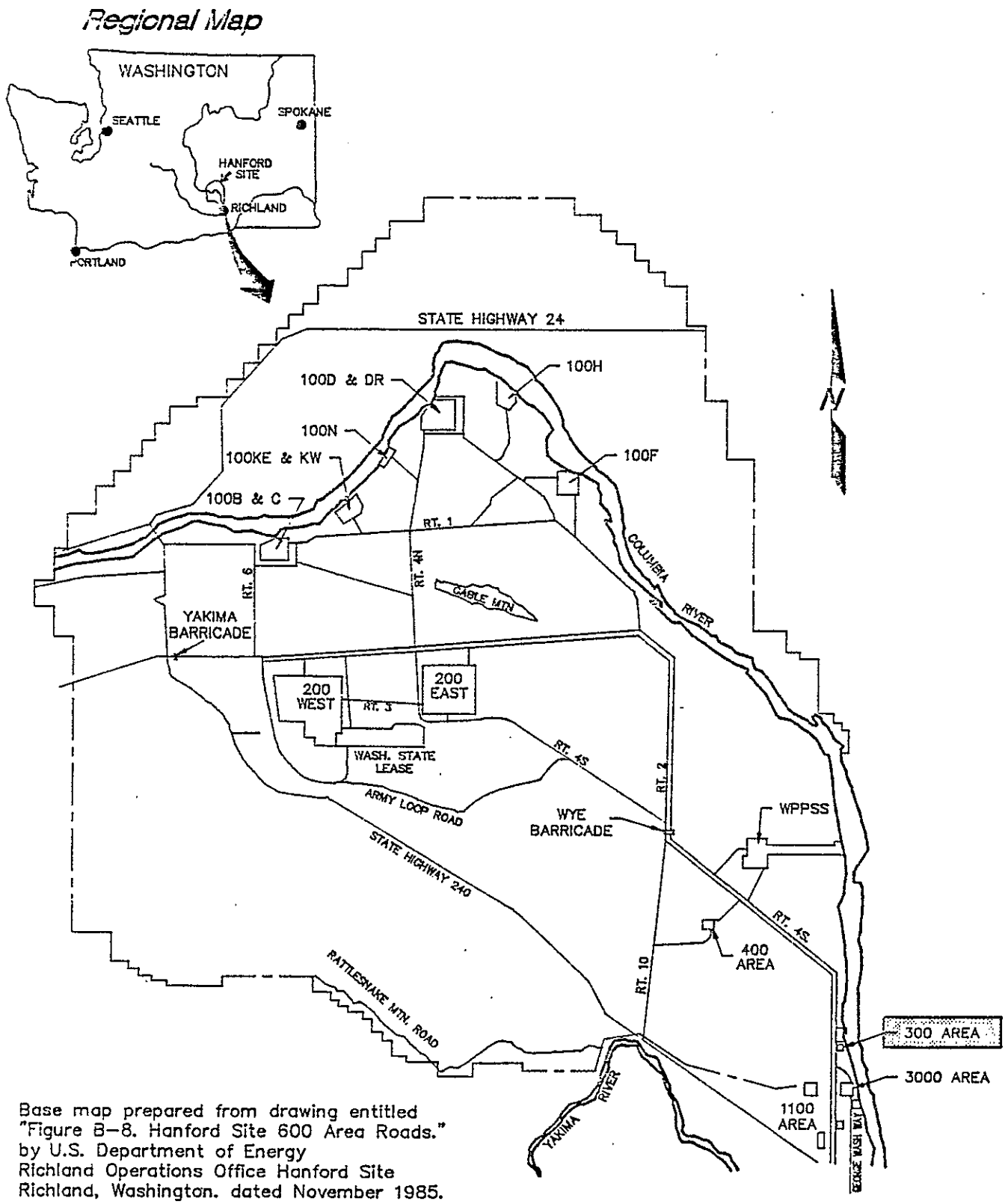
1.1 Hanford Site and Facility Description

A general description of the hazardous waste management facility is discussed in Sections 1.1.1 and 1.1.2. It is intended to provide the permit application reviewer or permit writer with an overview of the Hanford Site and this facility. Detailed description of the Solvent Evaporator facility and the solvent wastes treated by this facility are given in Sections 1.1.2 and 1.3.1, respectively.

1.1.1 LOCATION AND GENERAL DESCRIPTION

The Hanford Site is a 1,476 square kilometer tract of semiarid land (Figure 1-1). This site is located northwest of the city of Richland, Washington in the Columbia Basin. The center of Richland lies approximately 4.8 kilometers from the southern-most portion of the Hanford Site boundary and is the nearest population center (Figure 1-1). In early 1943, the U.S. Army Corps of Engineers selected the Hanford Site as the location for reactor, chemical separation, and related facilities to produce and purify plutonium. A total of eight graphite-moderated reactors using Columbia River water for once-through cooling were built along the Columbia River. These reactors were operated from 1944 to 1971. In 1963, the N Reactor began operation, however, current plans are to place the dual purpose plutonium and electricity generating reactor on cold standby status.

Activities at the Hanford Site are centralized in numerically designated areas. The reactor facilities are located along the Columbia River in what are known as the 100 Areas. The reactor fuel processing and



Base map prepared from drawing entitled
"Figure B-8. Hanford Site 600 Area Roads."
by U.S. Department of Energy
Richland Operations Office Hanford Site
Richland, Washington. dated November 1985.

Figure 1-1. Hanford Site and Regional Map

waste management facilities are located in the 200 Areas, which are on a plateau about seven miles from the Columbia River. The 300 Area, located north of Richland, contains the reactor fuel manufacturing facilities and several research and development laboratories. The 400 Area, eight kilometers northwest of the 300 Area, contains the Fast Flux Test Facility (FFTF). The 1100 Area, north of Richland, contains facilities associated with maintenance and transportation functions for the Hanford Site. Administrative buildings and other research and development laboratories are found in the 3000 Area, also located north of Richland.

1.1.2 300 AREA SOLVENT EVAPORATOR

The Solvent Evaporator facility was located in the 300 Area of the Hanford Site (see Figures 1-2 and 1-3) but no longer exists at that site since its demolition in 1985-1986 (see Section 3.2). It was situated in the northeast corner of the 300 Area near the 333 Building, 334 Sampling Shed, and 334-A Spent Acid Storage area as shown in Figures 1-2 and 1-3. The site for the Solvent Evaporator was chosen for its proximity to operations in the N Reactor Fuel Manufacturing Facility in the 333 Building. This facility was a treatment tank which received solvent wastes from the N Reactor Fuel Manufacturing Facility. The evaporator itself was a modified "Brooks" load lugger, i.e., dumpster (Figure 1-4), constructed of carbon steel with a nonsealing, hinged sheet metal lid. The lid minimized entry of precipitation and allowed one side to be lifted up for pouring the contents of large solvent drums into the Solvent Evaporator. The Solvent Evaporator

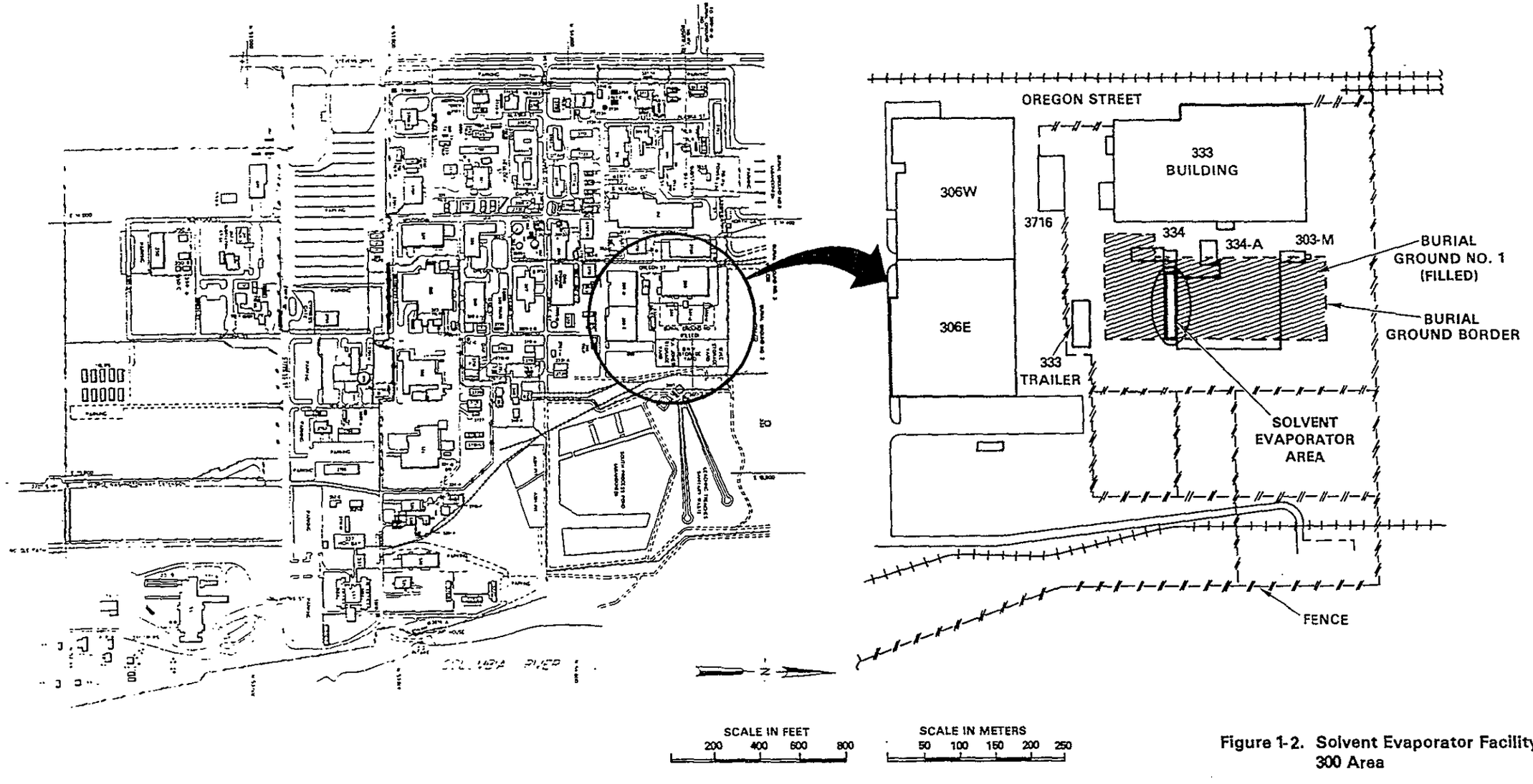


Figure 1-2. Solvent Evaporator Facility, 300 Area

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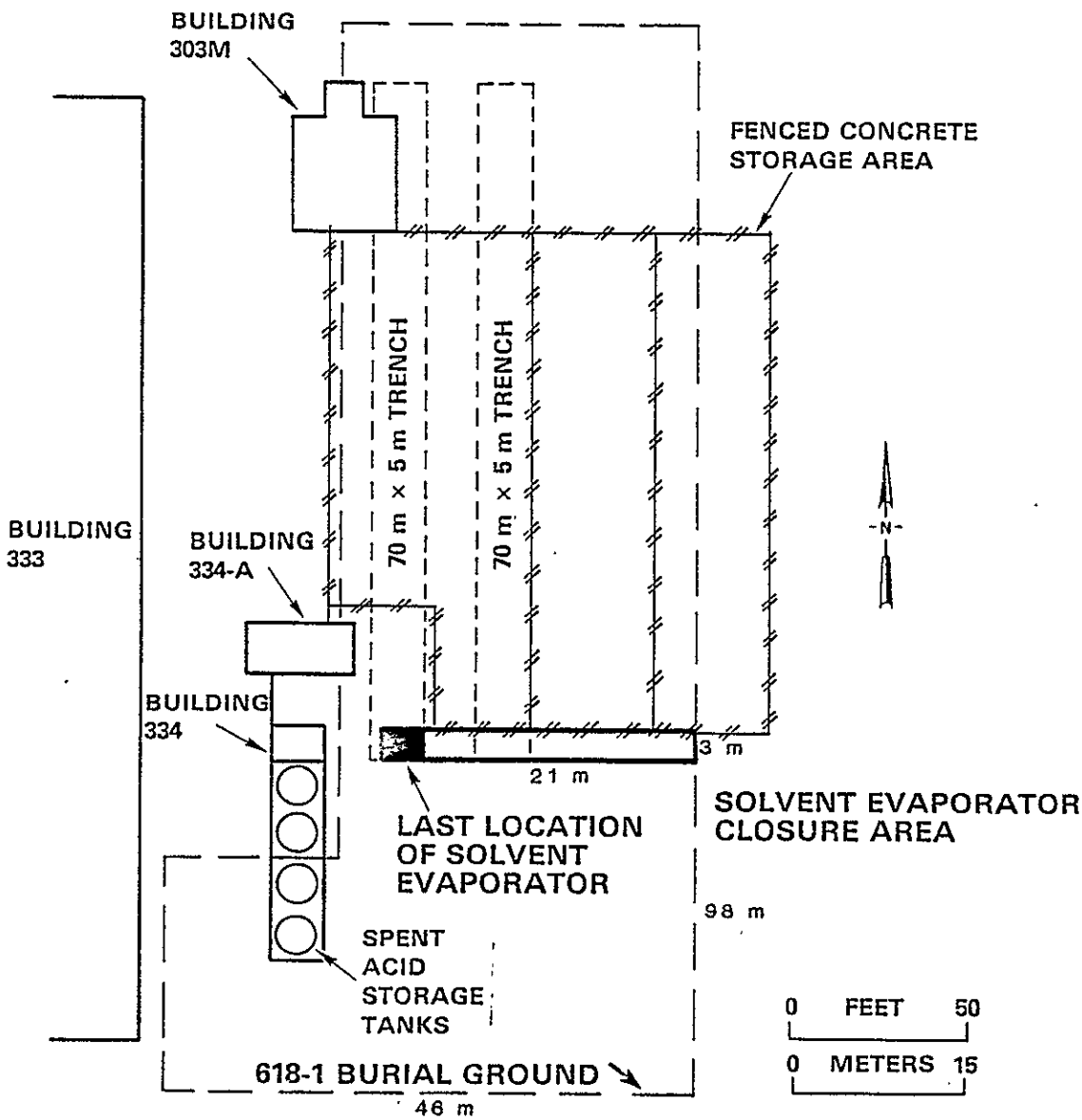
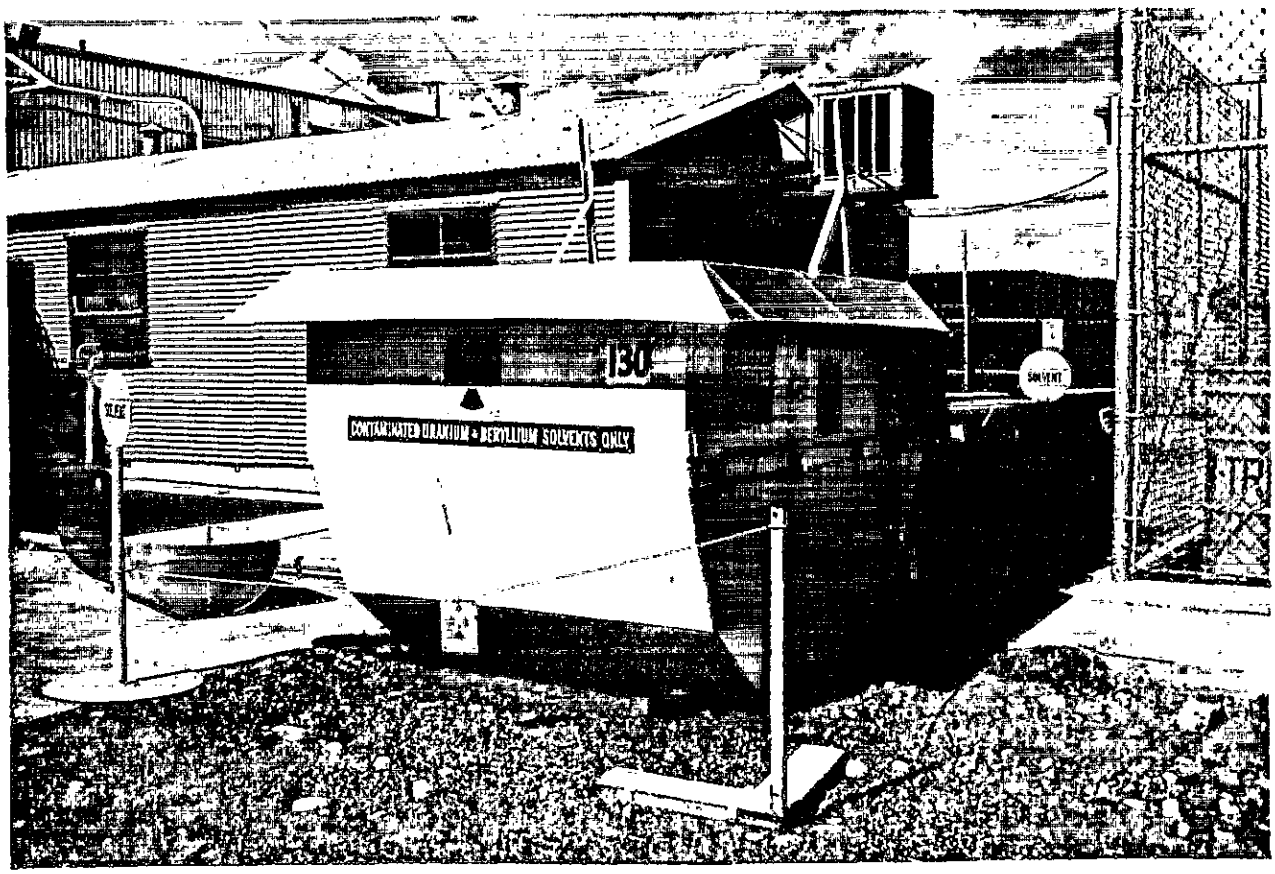


Figure 1-3 Layout of Solvent Evaporator Closure Area and 618-1 Burial Ground

300 AREA SOLVENT EVAPORATION UNIT 300 AREA



46°35'24.76"
119°15'59.75"

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(PHOTO TAKEN 1985)

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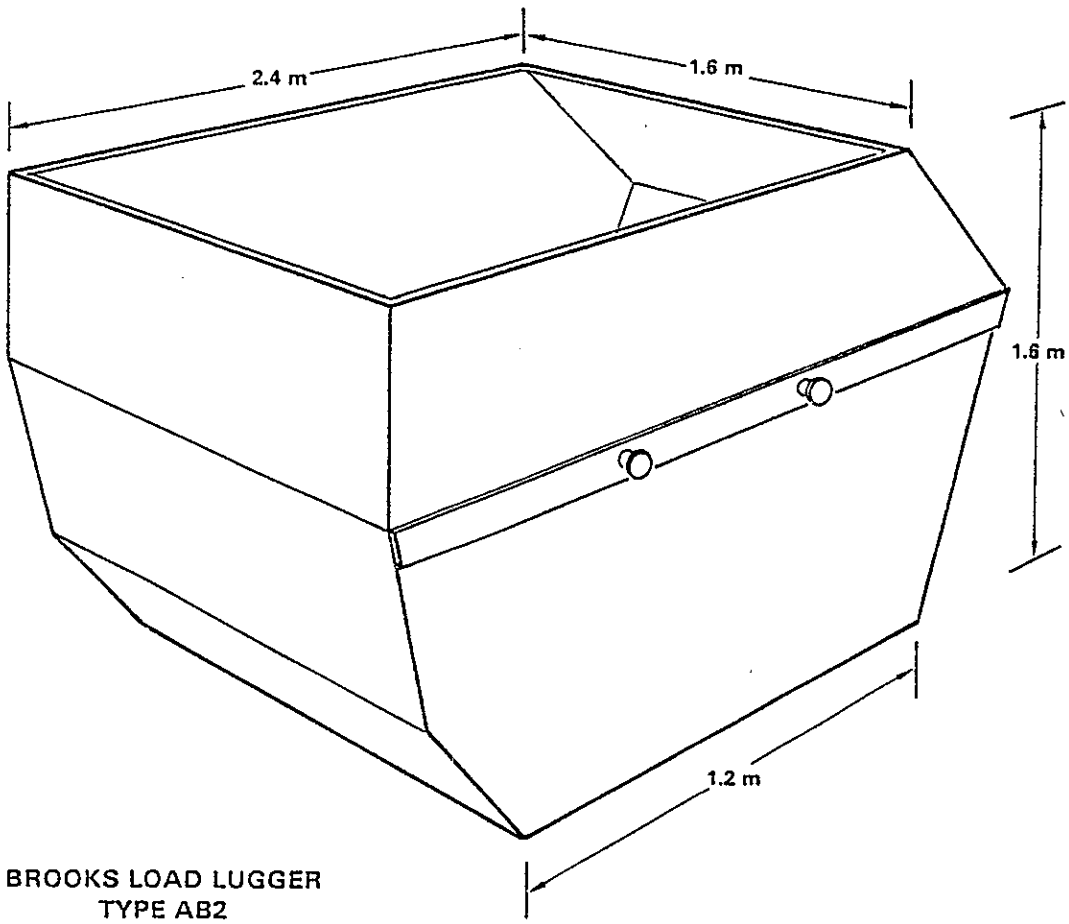


Figure 1-5 Schematic of 300 Area Solvent Evaporator Unit

was situated on a pallet which elevated it slightly above ground. Dimensionally, the Solvent Evaporator was approximately 2.4 meters long, 1.6 meters high, 1.6 meters wide at the top, and 1.2 meters wide at the bottom (Figure 1-5). A hinged lid on the upper portion of two of its sides was pushed up for pouring in small quantities of solvent. Therefore, a maximum fill depth of 0.9 meters was established to prevent solvent from overflowing. A heating coil was situated within the Solvent Evaporator to aid in the evaporation treatment process.

The Solvent Evaporator was operated as a treatment tank for volatile spent solvents. The Solvent Evaporator was moved at least twice within the designated closure area to accommodate nearby construction activities. Figure 1-3 shows the 3 meter by 21 meter closure area that encompasses the locations of the Solvent Evaporator during its ten-year operation. The last location of the Solvent Evaporator is indicated by the shaded area in this figure. A photograph of the Solvent Evaporator and vicinity while in operation (1985) is shown in Figure 1-6. A current photograph of the closure area is shown in Figure 1-7.

1.1.3 618-1 BURIAL GROUND UNDERLYING THE SOLVENT EVAPORATOR

Completely underlying the Solvent Evaporator closure area is an inactive low-level solid radioactive waste burial ground (current Hanford Site waste management identification number 618-1). The burial ground (previously referred to as Solid Waste Burial Ground #1) was in service from 1945 to 1957 and contains uranium from the 300 Area fuel fabrication

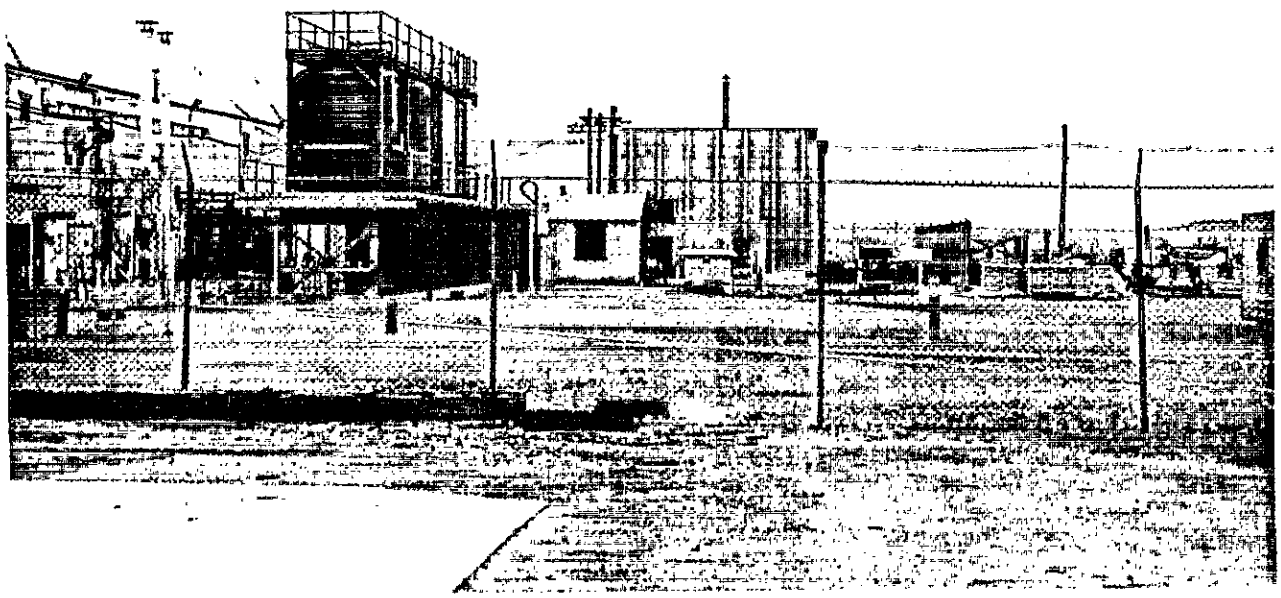


Figure 1-6. Photograph of Solvent Evaporator and 618-1 Burial Ground

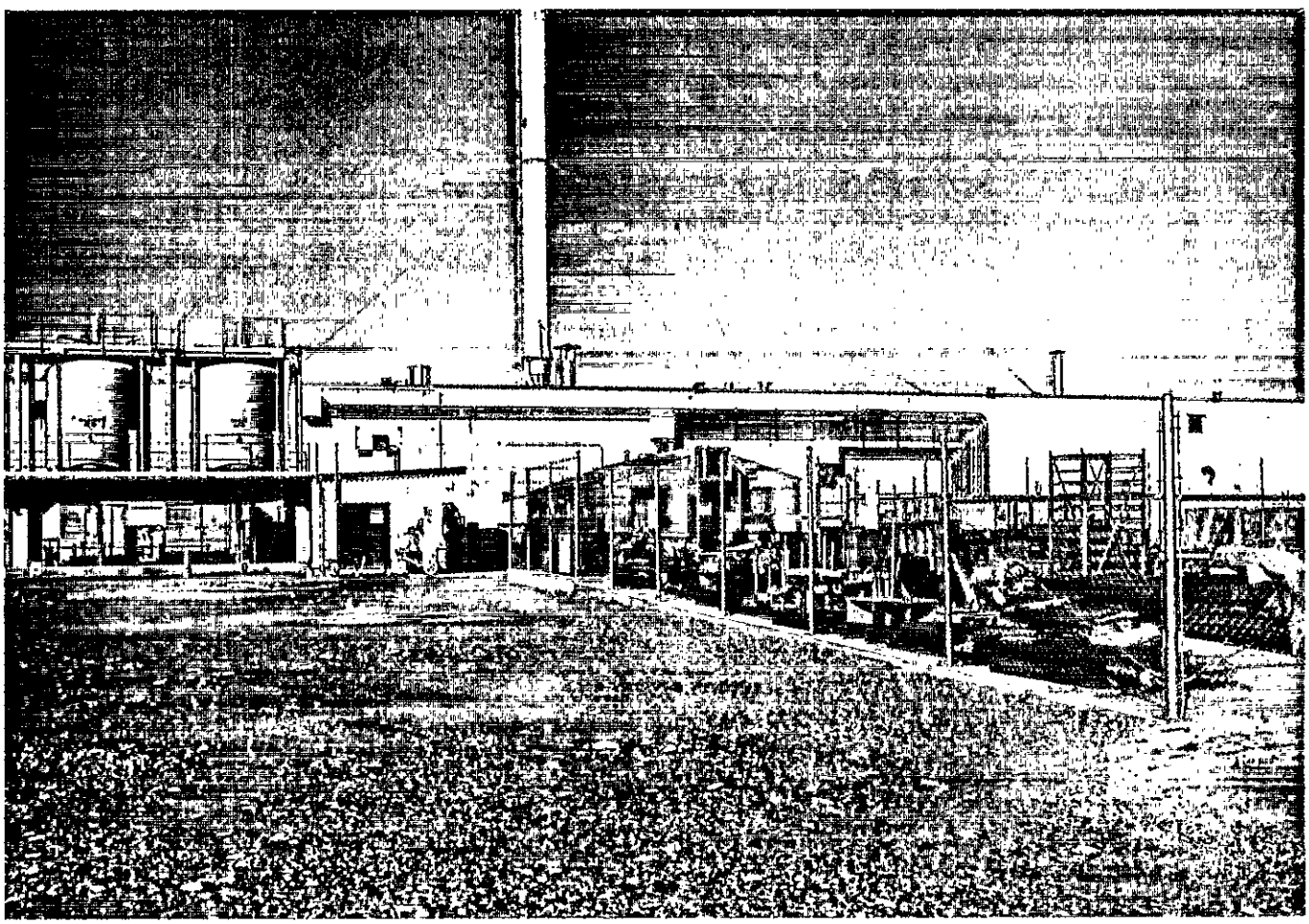


Figure 1-7. Current Photograph of Solvent Evaporator Closure Site

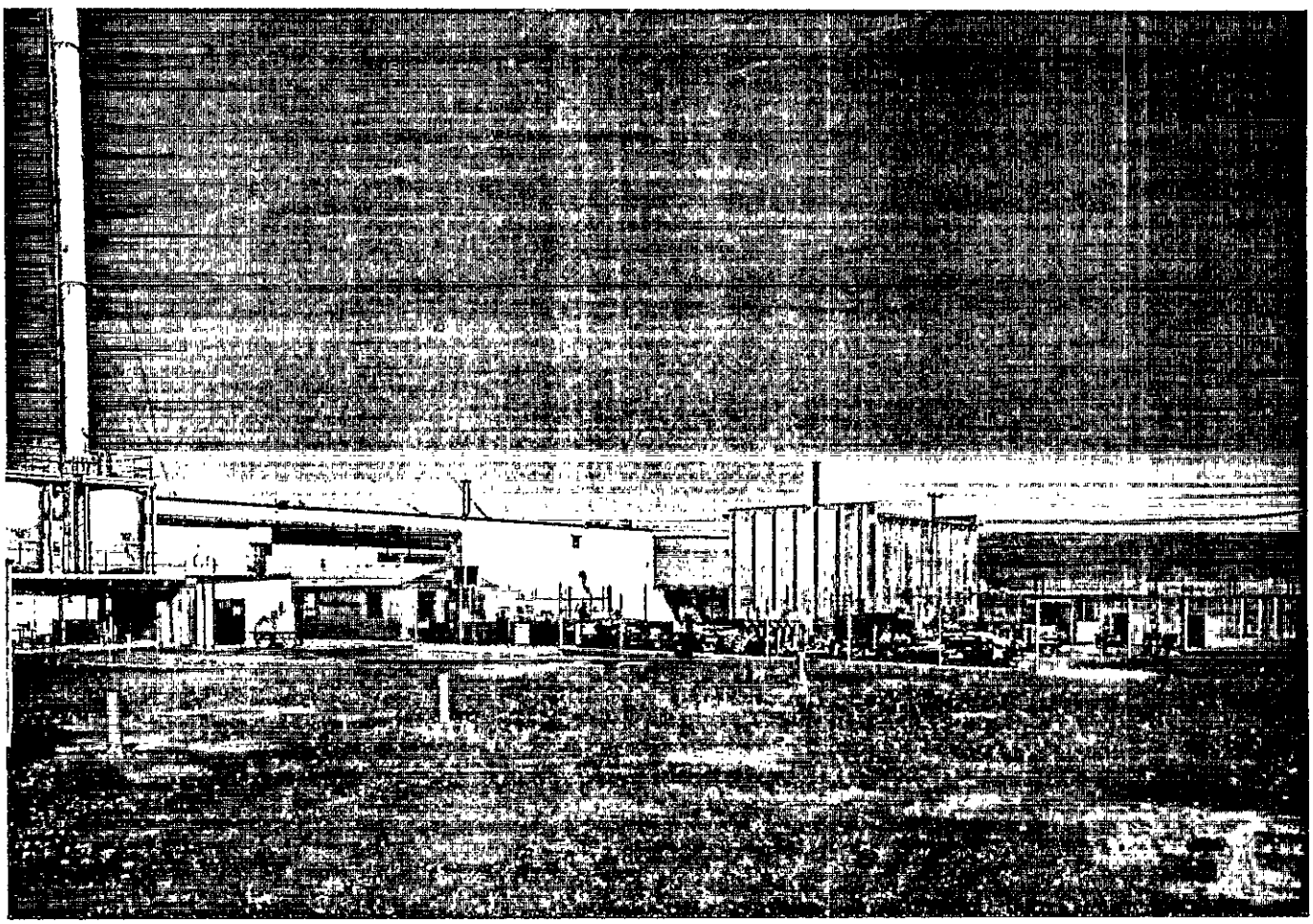


Figure 1-8. Current Photograph of Solvent Evaporator Closure Site and 618-1 Burial Ground

facilities, and plutonium, fission products, and incidental waste from a small laboratory operation. The approximate boundaries of this burial ground are shown in Figure 1-3. Figure 1-6 is a previous photograph of the area and Figure 1-8 is a current photograph of the burial ground. Known supporting documentation regarding the burial ground boundaries and operation appears in Appendix B. The burial ground covers an approximate total area of 4.5 square kilometers (46 meters wide by 98 meters long), and is 6 meters deep. Within this total area there are at least two trenches running north-south which are reportedly 5 meters wide by 70 meters long (at the surface) by 2.5 meters deep, and a series of pits (with uncertain locations) running east-west which are reportedly 4.5 meters wide and six meters deep (Figure 1-3 and Appendix B). At the end of service (1956-1957) the entire burial ground was covered with 1.2 meters of sand and gravel.

This burial ground has been proposed by the EPA for inclusion on the National Priorities List (NPL) of federal sites requiring remedial action and regulation under CERCLA. Further information regarding this action is summarized in Sections 3.3 and 3.5.

1.2 Security Information

The Hanford Site maintains an effective security program at the 300 Area because of continuing activities and the presence of several nearby radioactive disposal facilities. Though originally intended for the protection of government property, classified information, and special

nuclear material, the current security program meets the requirements for hazardous wastes as well. The security systems will prevent unknowing entry and minimize the possibility for unauthorized entry of persons into any of the hazardous (and radioactive) waste facilities.

Unauthorized or unintended entry to hazardous waste facilities is prevented by (1) 24-hour surveillance systems in the form of manned barricades at the entries to controlled access areas, (2) fences, gates, locks, and warning signs, or (3) a combination of both. The only personnel permitted to enter Hanford Controlled Areas are those who have been granted a security clearance from the DOE-RL, or visitors and uncleared employees escorted by an authorized employee. In addition, the Hanford Patrol provides surveillance patrols of the controlled areas.

The reactor fuel manufacturing facilities, including the Solvent Evaporator site, are additionally enclosed by a secondary fencing system. Access to the Solvent Evaporator site is controlled such that only pre-authorized personnel are allowed entry. Personnel were also assigned to supervise operations involving the Solvent Evaporator and, thereby, maintained an effective additional security system for the stored waste drums and the Solvent Evaporator.

Site personnel receive training on Hanford Site security regulations in the form of required security education and on-the-job training. Procedures for ensuring personnel compliance with security requirements, and provisions for security education, and personnel training are maintained at the Hanford Site. Periodic security compliance audits and inspections ensure that these

procedures are followed.

1.3 Waste Characteristics

1.3.1 SOLVENT EVAPORATOR WASTE

Wastes treated through evaporation in the Solvent Evaporator consisted of approximately 80% perchloroethylene (tetrachloroethylene) and 10% 1,1,1-trichloroethane by volume (Table 1-1). The remaining 10% of the waste consisted of a mixture of ethyl acetate/bromine solution (10% bromine), paint shop solvents such as methyl ethyl ketone, methylene chloride and petroleum naphtha (Table 1-1), uranium and metal particulates such as zirconium and possibly beryllium from degreasing activities, and incidental amounts of oil. According to the WAC dangerous waste designation criteria (WAC 173-303 Sec. 070, 101, 103 and 9904), the initial waste would have the designations WP01, WC01, WT01, F001 and F003 as extremely hazardous waste almost exclusively due to the perchloroethylene component. A summary of the waste designation calculations are presented in Appendix C.

Table 1-1 Solvent Waste Components

Waste Component	Volume	Density
perchloroethylene	80%	1.63
1,1,1 trichloroethane	10%	1.34
ethyl acetate		0.9
bromine		2.9
methyl ethyl ketone*	10%	0.8
methylene chloride*		1.33
petroleum naphtha*		0.9

* Denotes paint shop solvents that may or may not have been present.

A single sample of the solvent was collected from the Solvent Evaporator in January 1985 for an inorganic analysis in March 1985 as part of initial closure activities. The sample was submitted to Pacific Northwest Laboratories for analysis of uranium by X-ray Fluorescence (XRF) and for other elements by Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The concentrations of the elements analyzed by ICP-AES are presented in Table 1-2. The concentration of uranium in the solvent was below detection limit (less than 10 micrograms per milliliter). It is indicated from these data that the concentrations of the analyzed inorganic constituents are not significant for calculation of Equivalent Concentration (EC) in the waste mixture according to WAC 173-303-084. No further analyses were performed at that time.

Beryllium was also a possible constituent of the waste. Because its concentration was not determined, its maximum concentration in the solvent was calculated. The only potential source of beryllium in the waste was as particulate matter derived from the degreasing of zircaloy brazing rings and caps. Solvent from degreasing two varieties of zircaloy was introduced into the evaporator. The composition of one alloy contained zirconium without beryllium; the other alloy contained 93% zirconium, 4.75-5.25% beryllium, 1.14-1.7% tin, and less than 0.5% other impurities (by weight). Based on the composition of the second alloy and the amount of zirconium in the solvent (two parts per million), the maximum amount of beryllium that could have been present was about 0.11 parts per million. The EC of beryllium was 0.000011 percent by weight.

Table 1-2. Solvent Evaporator ICP-AES Analytical Results

	Detection[1] Limit µg/mL	NaOH/Zr[2] µg/mL	KOH/Ni[3] µg/mL	Average µg/mL
Aluminum	0.03	6	10	8
Antimony	0.05			
Arsenic	0.08			
Barium	0.002			
Boron	0.01	5	2	4
Cadmium	0.004			
Calcium	0.01	46	52	48
Cerium	0.04			
Chromium	0.02			
Cobalt	0.01			
Copper	0.004			
Dysprosium	0.004			
Europium	0.002			
Gadolinium	0.1			
Iron	0.005	6	78	30
Lanthanum	0.008			
Lead	0.06			
Lithium	0.004	4	2	3
Magnesium	0.06			
Manganese	0.002			
Molybdenum	0.01			
Neodymium	0.02			
Nickel	0.02		ND[4]	
Phosphorus	0.1	18	25	20
Potassium	0.3		ND	
Ruthenium	0.05			
Silicon	0.02	20	28	24
Sodium	0.01	ND	46	46
Strontium	0.002			
Tellurium	0.06			

Table 1-2. (continued)

	Detection[1] Limit µg/mL	NaOH/Zr[2] µg/mL	KOH/Ni[3] µg/mL	Average µg/mL
Titanium	0.002			
Zinc		0.02		
Zirconium	0.008	ND	2	2

1. ICP-AES analysis performed for the elements listed. No result reported for concentrations below detection limit.

2. Sodium hydroxide fusion in a zirconium crucible was performed to solubilize the sample.*

3. Potassium hydroxide fusion in a nickel crucible was performed to solubilize the sample.*

4. ND = Not determined.

* Two separate fusions and analyses were performed in order to determine sodium, zirconium, potassium, and nickel concentrations in the solvent waste.

NOTE: Concentration of uranium was below XRF detection limits (less than 10 micrograms per milliliter).

1.3.2 618-1 BURIAL GROUND WASTE

The characteristics of the wastes in the underlying 618-1 Burial Ground are not well known. The only known documented information is from the Hanford Waste Information Data System (WIDS) data base. This information is listed in Appendix B. Only plutonium (^{239}Pu and ^{240}Pu) was reported to be present in detectable concentrations, with the total Pu inventory calculated to be 0.077 curies decayed through December 12, 1986. According to this report other radionuclides and inorganic and organic contaminants were either not detected or were not analyzed. However, undocumented information on utilization of the burial ground indicates that it was a primary site for disposal of large quantities of scrap uranium waste (i.e., pieces of end rods for fuel elements) for all fuel manufacturing for reactors operating at the time. These fuel rods contain naturally occurring U_3O_8. Other items such as a uranium-contaminated truck are also alleged to be buried at this site. Although detailed information on the total amount of waste disposed in this burial ground is not available, estimates have been made on the basis of the extent of the activities during the time of operation. The total inventory of uranium in all 300 Area burial grounds has been estimated to be less than 227 kilograms (Szulinski, 1972). The 618-1 Burial Ground is estimated to have received up to 1.54 million kilograms of waste occupying a volume of 2.83 cubic kilometers. The maximum inventory of radionuclides received is estimated at up to 50 kilograms of uranium and approximately one gram of plutonium.

1.4 Solvent Evaporator Process Information

The Solvent Evaporator was utilized exclusively as an evaporation treatment facility for volatile spent solvents. Administrative controls were in place to prevent treatment of incompatible solvents in the Solvent Evaporator (see procedure UNI-M-46 ECC-114, Appendix D). Evaporation was enhanced using a clip-on steam heating coil immersed within the Solvent Evaporator to drive the treatment process. Steam was introduced to the heating coil through a hose which delivered the steam at a pressure of 0.103 megapascals. The Evaporator operated intermittently, and the steam heating coil operated primarily during the winter months when solvent levels were highest (see procedure UNI-M-58, E-14; Appendix D). Perchloroethylene and 1,1,1-trichloroethane were waste degreasing solvents and may have been contaminated with uranium, beryllium, and zirconium from degreasing uranium billets, zircaloy braze rings, and miscellaneous tools and parts. The Solvent Evaporator was established as a treatment facility mainly for these fuel manufacturing waste solvents. Ethyl acetate/bromine solution and paint solvents from facilities maintenance were also treated in the Solvent Evaporator. Any nonvolatile components that were soluble in the solvent (e.g., oil) would only have accumulated as a sludge at the bottom of the Solvent Evaporator as the solvent was evaporated. A process procedure (UNI-M-46, ECC-114; Appendix D) indicates that 17-C-type 55-gallon drums, designed to receive sludge-type materials, were kept near the site. During the active life of the Solvent Evaporator, however, there was not enough sludge to warrant clean out or use of the 17-C drums.

Administrative controls limited the use of the Solvent Evaporator to organic solvents that could not be disposed of through the onsite waste oil system, and prevented treatment of incompatible solvents (procedure UNI-M-46, ECC-114; Appendix D). Heavy oils, greases, and aqueous solutions were disposed in accordance with procedure UNI-M-46, ECC-104 (Appendix D). To ensure proper operation and maintenance of the evaporator, facility management conducted inspections on an annual basis (procedure UNI-M-46, ECC-114; Appendix D).

Under the supervision of operations personnel, drums of waste solvent that were delivered for treatment were poured into the Solvent Evaporator through the hinged top. If the Solvent Evaporator was at or near its maximum capacity, the drums of solvent were staged on the nearby concrete pad pending sufficient capacity in the Solvent Evaporator. Forklifts equipped with drum handling attachments were used for drum relocation and large-volume solvent transfer to the evaporator. Once emptied, unrinsed drums were also occasionally stored on the pad pending disposal or return to the generator for reuse. Drums were stored on pallets to elevate them off the concrete pad and away from possible accumulated rainwater. The pad was also utilized for equipment and materials storage. It was the expansion and subsequent fencing of this storage area that necessitated the Solvent Evaporator's relocation over its 10 year operating period. The Solvent Evaporator treated, through evaporation, approximately 6,000 gallons (22,710 liters) of regulated waste during its ten years of operation or an average of approximately 600 gallons (2,271 liters) per year

(see Appendix A). The maximum treatment capacity has been estimated at approximately 220 gallons (833 liters) per day (Appendix A). The Solvent Evaporator had a maximum fill depth of about a meter which allowed a maximum storage capacity of 750 gallons (2,839 liters).

Only one spill is known to have occurred at the Solvent Evaporator closure area, although no formal spill report is known to exist. This spill resulted from a ruptured steam hose that filled the Solvent Evaporator to overflowing with water. However, it was estimated that very little, if any, solvent was present in the overflow because most of the solvent had a higher density than water (Table 1-1), and thus, remained inside the Solvent Evaporator. A worst case scenario of a 100 gallon (379 liter) spill of solvent was developed to determine the types and amounts of residuals that could presently remain in the soil. Most of the solvent mixture would have been expected to pass through the soil into the underlying burial ground given the loose porous nature of the 1.2 meter soil layer onto which the spill would have occurred. Due to the high volatility of the solvents, the porosity of the soil and the length of time since the spill (greater than three years), no significant amount of solvent would be expected to remain in the soil at this time. Because the maximum amount of beryllium in the initial solvent would have been below regulated concentrations (Equivalent Concentration in mixture: 0.000011 weight percent), any beryllium residue remaining in the soil after evaporation of the solvent would itself not be a regulated waste.

2.0 CLOSURE ACTIVITIES

2.1 Closure Performance

It is intended that closure of the 300 Area Solvent Evaporator facility will:

- Protect human health and the environment by controlling, minimizing, and/or eliminating escape of dangerous waste, dangerous waste constituents, leachate, contaminated runoff, or dangerous waste decomposition products to the ground, surface water, groundwater, or the atmosphere.
- Restore the land to a condition that will support its intended subsequent use given the nature of the previous regulated waste activity.
- Minimize the need for further maintenance.

The closure of this facility involves four steps.

1) Removal and solidification of the solvent waste.
2) Cleaning and demolition of the Solvent Evaporator.
3) Transportation and disposal of the solvent waste and Solvent Evaporator.
4) Final disposition of the site to be determined through the Remedial Investigation/Feasibility Study (RI/FS) to be conducted for the 300 Aggregate Area Operable Units.

The first three of these steps have been completed and are discussed in detail in Section 3.2. Because this facility had a spill during its operating life and was located adjacent to the 618-1 burial ground, soil sampling, analysis, evaluation, and possible decontamination plans are most appropriately addressed with remedial action of the 618-1 Burial Ground. Justification for this approach is presented in Section 3.3. The current status of remedial action for the 300 Aggregate Area Operable Units is presented in Section 3.5.

Two official copies of the 300 Area Solvent Evaporator closure plan are to be located at the following office: United States Department of Energy - Richland Operations Office, Federal Building, 825 Jadwin Avenue, P.O. Box 550, Richland, Washington 99352. The closure plan will be available at the DOE-RL office, and the DOE-RL will be responsible for maintaining and/or amending the plan, as necessary.

3.0 DESCRIPTION OF CLOSURE ACTIVITIES

Initial closure activities were carried out from 1985 to 1986 in order to minimize potential danger to the onsite personnel and the environment. The remaining activities necessary for final closure/post-closure monitoring are proposed to be performed in conjuction with the inactive site activities planned for the 300 Area Aggregate Area Operable Units.

3.1 Maximum Extent of Operation

The active life of the Solvent Evaporator facility ceased in November 1985 (Table 3-1). Final closure of the site will be addressed as part of the 300 Aggregate Area Operable Units activities.

3.2 Removal and Management of Hazardous Wastes

3.2.1 ESTIMATE OF MAXIMUM INVENTORY OF HAZARDOUS WASTES

The Solvent Evaporator received solvents used in the 300 Area reactor fuel manufacturing facilities. The maximum annual inventory of hazardous wastes in treatment at any time during the life of the facility was approximately 600 gallons (2,271 liters). Thus, the maximum volume of chemicals treated in the Solvent Evaporator over the 10 year operating term is estimated at 6,000 gallons (22,710 liters). Perchloroethylene constituted approximately 80% (1,817 liters) and 1,1,1-trichloroethane approximately 10% (227 liters) of this 2,271 liter annual inventory. The remaining 10% (227 liters) was composed of ethyl acetate/bromine, dissolved oil, and paint shop solvents.

Table 3-1

SCHEDULE OF 300 AREA SOLVENT EVAPORATOR CLOSURE ACTIVITIES

January	1985	Waste solvent sampled
March	1985	Analysis performed on waste solvent
August	1985	Deliveries to 300 Area Solvent Evaporator suspended; last solvents added
November	1985	Heating process terminated; final shutdown; solidification of final waste inventory initiated; demolition of Solvent Evaporator facility initiated
February	1986	Disposal of solidified waste inventory at 200 West Area Low-Level Burial Ground
March	1986	Demolition of Solvent Evaporator facility completed
July	1986	Disposal of burial box containing dismantled Solvent Evaporator and equipment in 200 West Area Low-Level Burial Ground
April	1988	Submittal of revised Closure Plan to the Washington Department of Ecology (Ecology); anticipated proposal of the 300 Aggregate Area Operable Units on the NPL; anticipated initiation of remedial investigation

3.2.2 REMOVAL AND MANAGEMENT OF HAZARDOUS WASTE INVENTORY

Spent solvents were no longer received from the operating facilities after August 1985, at which time the remaining solvents staged at the nearby concrete pad were poured into the Solvent Evaporator and permitted to evaporate. Final shutdown was initiated in November 1985 when the treatment process was terminated. Approximately 1,900 liters of spent solvent remained in the Solvent Evaporator at this time and the following steps were undertaken to remove and solidify the solvent waste. A copy of a sample procedure for solidifying and packaging of waste solvents (UNI Process Work Request No. B-441 and UNI-M-57, D-411) is included in Appendix D.

1. Obtain equipment (e.g., steel pan, hand pump, shovel, air mixer, fork lift truck, empty 30 and 55 gallon 17-H drums) and materials (e.g., dolomite, water, Envirostone* liquid emulsifier and cement).
2. Place a 30 gallon drum with lid inside a 55 gallon drum and utilize the steel pan as a catch basin.
3. Fill the void between the drums with dolomite, an inert filler material, and then remove the lid from the 30 gallon drum.
4. Pump 13 gallons of liquid solvent, 6.5 gallons of water, and 1.5 gallons of Envirostone liquid emulsifier into the 30 gallon drum.
5. Use an air operated mixer to stir contents of the 30 gallon drum for two minutes.

*- Envirostone is a trademark of the U.S. Gypsum Company of Chicago, Ill.

6. Add 160 pounds of Envirostone cement to the 30 gallon drum contents with mixer running and stir for an additional 10 to 15 minutes.
7. Move drums via forklift truck to the adjacent concrete storage pad and allow cement to cure for at least 24 hours.
8. Repeat Steps 2 through 7 until all of the liquid solvent and solvent sludge, which is removed with a shovel from the bottom of the Solvent Evaporator, have been solidified.
9. Place contaminated tools in the Solvent Evaporator and rinse tools as well as the Solvent Evaporator and solidify the rinsate by performing Steps 2 through 7.
10. Fill remaining space in the 30 gallon drums with dolomite and seal drum with lid, lock ring, and bolt.
11. Fill void space between 30 and 55 gallon drums with dolomite.
12. Seal the 55 gallon drums, label, and survey.
13. Place drums in the waste materials storage area east of the 333 Building until shipment.

3.2.2.1 Cleaning and Demolition of Solvent Evaporator

Although the Solvent Evaporator was rinsed as thoroughly as possible in the cleaning process (see Step 9, Section 3.2.2), some residual perchloroethylene and 1,1,1-trichloroethane may have remained in the Solvent Evaporator. No verification rinse samples were taken.

By March 1986 the Solvent Evaporator had been cut up using a cutting torch which avoided contaminating mechanical cutting tools. The pieces were

then placed in a standard 1.2 by 1.2 by 2.4 meter plywood burial box, designated C-39 (see Burial Checklist 3-5B-1A-1 in Appendix D). Clothing and miscellaneous paper and plastic products utilized during this operation were also disposed of in this box. The void space in the box was filled with inert absorbent material. A sample copy of a fuels maintenance work authorization for cutting up and boxing of the Solvent Evaporator is provided in Appendix D.

3.2.2.2 Transport and Disposal of Solvents and Solvent Evaporator

The drums of solidified solvent, rinsate, and the sectioned Solvent Evaporator burial box were transported in compliance with Department of Transportation regulations. The drums and Solvent Evaporator burial box were loaded by a forklift truck onto a semi-trailer truck and transported to the 200 West Area Low-Level Burial Grounds. Fifty-seven 55 gallon drums of solidified solvent, sludge, and rinsate were generated from the cleanup effort and buried during February 1986 (Burial Compliance Checksheets 3-1A-76 and 3-1A-7L-1; Burial Record 313-UNC-80-10; Appendix D). The Solvent Evaporator burial box had a total volume of 36.25 cubic meters and was buried in July 1986 (Burial Compliance Checksheet 3-5B-1A-1 and Burial Record 313-UNC-86-4).

3.2.2.3 Offsite Hazardous Waste Management Units

All hazardous waste management units at the Hanford Site are under the EPA ID # WA789008967 which provides interim operating status designation.

3.3 Decontamination and Removal of Hazardous Waste Residues

It is proposed that decontamination and removal of any hazardous waste residues from the 300 Area Solvent Evaporator be evaluated together with the 300 Aggregate Area Operable Units. In the event that the site is listed on the NPL, the facility will be subjected to remediation under CERCLA and will be required to enter into an Interagency Agreement with the EPA for implementation of remedial action. Alternatively, the site may be subject to remedial action under the State Hazardous Waste Cleanup Act (RCW 70.105B) if it is not included on the NPL. This proposal is the most appropriate action for disposition of the 300 Area Solvent Evaporator site in accordance with the Washington Department of Ecology regulations and the intent of the EPA guidelines. Although assessment of potential contamination to the environment (i.e., soil and groundwater) and necessary decontamination and/or monitoring are among the few activities that remain for closure of the 300 Area Solvent Evaporator site, the proximity of the site to the underlying 618-1 Burial Ground precludes closure of the Solvent Evaporator site separately from the burial ground. The lack of detailed waste records for the burial ground could pose a hazard to workers and the environment if the Solvent Evaporator closure actions are not integrated with the burial ground remedial action. The burial ground remedial investigation will provide the necessary information to enable safe closure of the Solvent Evaporator site. Therefore, final closure actions will be performed in conjuction with remedial action determined to be appropriate for the

300 Aggregate Area Operable Units.

Potential risk to the environment arises from: 1) uncertainty involving the exact types and amounts of wastes in the underlying burial ground, and 2) the risk that soil sampling of the 1.2 meter cover could create the potential for entrance or exit of waste, or disturb the site and create conditions (e.g., oxidizing) conducive to the mobilization of waste to the environment. Potential risk to the health of sampling or excavation crews could arise from exposure to radiological or other chemical hazards. It is also uncertain how the soil in the closure area might have been affected by upward migration of waste from the underlying burial ground. Any volatile waste from the burial ground and any spilled solvent from the Solvent Evaporator that entered the burial ground could migrate upward into the soil cover, though it is likely that it would rapidly evaporate from the soil. This uncertainty would compromise efforts to determine the extent of contamination resulting from the Solvent Evaporator owing to the persistence of certain solvents, and also efforts to demonstrate any required remedial decontamination of the site. Environmental monitoring of the area could not be performed separately from the underlying burial ground, and restoration of the site to the natural environment could also be problematic owing to the fact that the "environment" is an engineered soil cover above the burial ground. Because the performance of most these activities cannot be separated from the underlying burial ground, the most appropriate measure for addressing the remaining closure activities of the 300 Area Solvent Evaporator site is to include the site with the

300 Aggregate Area Operable Units remedial action.

3.4 Other Activities Required for Closure

Further closure activities will be accomplished as part of the 300 Aggregate Area Operable Units remedial action.

3.5 Schedule for Closure

Upon approval of this plan, schedules for remedial action of the 300 Aggregate Area Operable Units would depend on the status of the NPL listing for the Hanford site. The 300 Aggregate Area Operable Units containing the 618-1 Burial Ground received a HRS score sufficient for inclusion on the NPL. A submittal package is currently under evaluation by EPA Region X for inclusion of this Aggregate Area on the NPL, and a decision is now pending. Placement of the site on the NPL would initiate remedial action requirements of 42 United States Code Sections 9620 (e)-(h). Subsequent to scoping studies, a preliminary schedule of activities will be prepared, and a reprioritized schedule will be issued after fiscal year 1989.

3.6 Amendment of Plan

The original closure plan for Solvent Evaporator was submitted to Ecology in November 1985. This plan has now been revised to reflect the completion of the stated initial closure activities and notification to the regulating authorities of the current status of the site (i.e., potential

inclusion on the NPL for the 300 Aggregate Area Operable Units). The DOE-RL office will be responsible for any further amendments to this plan.

3.7 Schedule for Beginning of Closure

Closure of the Solvent Evaporator site began with suspension of solvent waste deliveries to the site in August 1985, and termination of the heating process and final shutdown of the facility in November 1985 (Table 3-1).

3.8 Schedule for treatment, Removal, and Disposal of Final Waste Volume

Removal, solidification and disposal of the final waste volume was initiated in November 1985 and completed in July 1986. The schedule of these activities is summarized in Table 3-1. Final disposition of the site will be determined in conjunction with the remedial investigation for the 300 Aggregate Area Operable Units.

3.9 Closure Completion and Extensions of Time Period

It is required that final closure be completed within 180 days after receipt of the final volume of waste, or within 180 days after approval of the closure plan, whichever is later, unless an extension is granted. Because the Solvent Evaporator site falls within the 300 Aggregate Area Operable Units the final schedule for disposition of the site will be included in the schedule for the aggregate area.

4.0 CERTIFICATION OF CLOSURE AND SURVEY PLAT

4.1 Certification of Closure

Within 60 days of final closure of the 300 Area Solvent Evaporator, DOE-RL will submit to Ecology certification of closure. This certification will be signed by both DOE-RL and an independent Professional Engineer registered in the State of Washington, stating that the facility has been closed in accordance with the approved Closure Plan. The certification will be submitted by registered mail. Documentation supporting the closure certification will be retained and furnished to Ecology upon request. The DOE-RL will self-certify with the following document or a document similar to it:

> I, (name), an authorized representative of the U.S. Department of Energy-Richland Operations Office located at the Federal Building, 825 Jadwin Avenue, Richland, Washington, hereby state and certify that the 300 Area Solvent Evaporator, to the best of my knowledge and belief, have been closed in accordance with the attached approved closure plan, and that the closure was completed on (date). (Signature and date)

Professional Engineer Closure Certification: The DOE-RL will engage an independent Professional Engineer registered in the State of Washington to certify that the facility has been closed in accordance with this approved

closure plan. The DOE-RL will require the engineer to sign the following document or a document similar to it:

> I, (name), a certified Professional Engineer, hereby certify, to the best of my knowledge and belief, that I have made visual inspection(s) of the 300 Area Solvent Evaporator and that closure of the aforementioned facility has been performed in accordance with the attached approved closure plan. (Signature, date, Professional Engineer license number, business address, and phone number).

4.2 Survey Plat

The DOE-RL will file, within 60 days after final closure, the following documents, or similar documents will be submitted to the local land use authority and the regulating authorities (Ecology and EPA). The land use authority is the Benton County Planning Department located at the Courthouse Building, Prosser, Washington 99350.

A survey plat indicating the location and dimensions of the facility (to the extent the information exists and with respect to permanently surveyed benchmarks) will be submitted. This plat will be prepared by a certified professional land surveyor. The following note is to accompany the survey plat:

"This plat describes real property in which hazardous wastes have been disposed in accordance with the requirements of 40 CFR Parts 265.116 and 265.119. Although this hazardous waste disposal facility is now closed, regulations issued by the EPA in 40 CFR 265.119 require that post-closure use of the property never by allowed to disturb the integrity of the final cover (if any) unless it can be demonstrated that any proposed disturbance will not increase the risk to human health or the environment."

A record of the type, location, and quantity of hazardous wastes disposed of within the facility to the extent that the information exists shall be submitted. During the post-closure care period, any changes to this record shall be submitted to the regulating authority.

5.0 POST-CLOSURE

The Solvent Evaporator and 618-1 Burial Ground sites are proposed to be handled together as part of the 300 Aggregate Area Operable Units. Post-closure activities and schedules have not yet been formulated, but are under consideration as part of the scoping studies underway in conjunction with Ecology and EPA.

5.1 Notice in Deed

The DOE-RL will, in accordance with the state law, sign, notarize, and attach the following notation to the deed of the 300 Area Solvent Evaporator area within 180 days of the start of the post-closure care period:

TO WHOM IT MAY CONCERN

The U.S. Department of Energy-Richland Operations Office, an operations office of the U.S. Department of Energy, which is a department of the United States Government, the undersigned, whose local address is the Federal Building, 825 Jadwin Avenue, City of Richland, County of Benton, State of Washington, hereby gives the following notice as required by 40 CFR 265.120 and/or WAC 173-303-610(10):

(a) The United States of America is, and since April 1943, has been in possession in fee simple of the following described lands (legal description).

(b) Since November 19, 1985, the U.S. Department of Energy-Richland Operations Office has disposed of hazardous and/or dangerous waste under the terms of regulations promulgated by the United States Environmental Protection Agency and/or Washington Department of Ecology to the above-described land.

(c) The future use of the above-described land is restricted under the terms of 40 CFR 264.117(c) and/or WAC 173-303-610(7)(d).

(d) Any and all future purchasers of this land should inform themselves of the requirements of the regulations and ascertain the amount and nature of wastes disposed on the above-described property.

(e) The U.S. Department of Energy-Richland Operations Office has filed a survey plat with the Benton County Planning Department and with the United States Environmental Protection Agency Region X and/or Washington Department of Ecology showing the location and dimensions of the 300 Area Solvent Evaporator site and a record of the type, location and quantity of waste treated.

5.2 Closure Cost Estimate

Federal facilities are exempt from this section per 40 CFR 265.140(c) and WAC 173-303-620-(1)(c).

5.3 Financial Assurance Mechanism for Closure

Federal facilities are exempt from this section per 40 CFR 265.140(c) and WAC 173-303-620-(1)(c).

5.4 Post-Closure Cost Estimate

Federal facilities are exempt from this section per 40 CFR 265.140(c) and WAC 173-303-620-(1)(c).

5.5 Financial Assurance Mechanism for Post-Closure Care

Federal facilities are exempt from this section per 40 CFR 265.140(c) and WAC 173-303-620-(1)(c).

5.6 Liability Requirements

Federal facilities are exempt from this section per 40 CFR 265.140(c) and WAC 173-303-620-(1)(c).

6.0 REFERENCES

EPA, 1986, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Title 40, Code of Federal Regulations, 256, U.S. Environmental Protection Agency, Washington, D.C.

Szulinski, M.J., 1972, Preliminary Problem Definition Decommissioning the Hanford Site, ARH-2164.

WAC, 1984, "Dangerous Waste Regulations," Washington Administrative Code, WAC-173-303, Olympia, Washington.

FORM 1

State of Washington Department of Ecology

WASHINGTON STATE

DANGEROUS WASTE PERMIT GENERAL INFORMATION

(Read "Form 1 instructions" before starting)

I. EPA/STATE I.D. NUMBER

WA 7 8 9 0 0 0 8 9 6 7

II. NAME OF FACILITY

U S DEPT OF ENERGY RICHLAND OPERATIONS OFFICE (DOE-RL)

III. FACILITY CONTACT

A. NAME & TITLE (last, first, & title): LAWRENCE, MICHAEL J. MANAGER

B. PHONE (area code & no.): 509 376 7395

IV. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX: PO BOX 550

B. CITY OR TOWN: RICHLAND

C. STATE: WA

D. ZIP CODE: 99352

V. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER: HANFORD SITE

B. COUNTY NAME: BENTON

C. CITY OR TOWN: RICHLAND

D. STATE: WA

E. ZIP CODE: 99352

F. COUNTY CODE (if known): 005

VI. SIC CODES (4-digit, in order of priority)

A. FIRST: 9711 (specify) NATIONAL SECURITY

B. SECOND: 8922 (specify) NUCLEAR NONCOMMERICAL RESEARCH DEVELOPMENT AND EDUCATION

C. THIRD: 9611 (specify) ADMINISTRATION AND GENERAL ECONOMICS PROGRAM

D. FOURTH: 4911 (specify) STEAM-ELECTRIC GENERATOR

VII. OPERATOR INFORMATION

A. NAME: WESTINGHOUSE HANFORD COMPANY/DOE-RL

B. Is the name listed in Item VII-A also the owner? [X] YES [ ] NO *CO-OPERATORS

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL, S = STATE, P = PRIVATE, M = PUBLIC (other than federal or state), O = OTHER (specify)

F (specify)

D. PHONE (area code & no.): 509 376 7803

E. STREET OR P.O. BOX: PO BOX 1970/PO BOX 550

F. CITY OR TOWN: RICHLAND

G. STATE: WA

H. ZIP CODE: 99352

VIII. INDIAN LAND

Is the facility located on Indian lands? [ ] YES [X] NO

COMPLETE BACK PAGE

ECY 030-31

ECLA -279-

9011712

IX. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids undergound. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

X. NATURE OF BUSINESS *(provide a brief description)*

- NATIONAL DEFENSE NUCLEAR MATERIAL PRODUCTION
- ENERGY RESEARCH AND TECHNOLOGY DEVELOPMENT
- DEFENSE NUCLEAR WASTE MANAGEMENT
- BYPRODUCT STEAM, SOLD FOR ELECTRIC POWER GENERATION
- AND SIC 15: BUILDING CONSTRUCTION - GENERAL CONTRACTORS AND OPERATIVE BUILDERS

XI. CERTIFICATION *(see instructions)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
SEE ATTACHMENT		

FORM 1

DANGEROUS WASTE PERMIT GENERAL INFORMATION

XI. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Michael J. Lawrence — 11-16-87

Michael J. Lawrence
Manager, Richland Operations
United States Department of Energy

Date

W. M. Jacobi — 11/16/87

William M. Jacobi
President
Westinghouse Hanford Company

Date

(use print or type in the unshaded areas only)
(if in areas are spaced for elite type, i.e. 12 characters/inch)

FORM 3

DANGEROUS WASTE PERMIT APPLICATION

I. EPA/STATE I.D. NUMBER: WA7890008916

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (mo., day, & yr.)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

☐ 2. NEW FACILITY *(Complete item below.)*

* MO. 7 DAY 5 YR. — FOR EXISTING FACILITIES, PROVIDE THE DATE (mo., day, & yr.) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

MO. DAY YR. — FOR NEW FACILITIES PROVIDE THE DATE (mo., day, & yr.) OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Section I above)*

☒ 1. FACILITY HAS AN INTERIM STATUS PERMIT

☐ 2. FACILITY HAS A FINAL PERMIT

III. PROCESSES — CODES AND DESIGN CAPACITIES

A. PROCESS CODE — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the *(Section III-C)*.

B. PROCESS DESIGN CAPACITY — For each code entered in column A enter the capacity of the process.
1. AMOUNT — Enter the amount
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D80	GALLONS OR LITERS
LANDFILL	D81	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D82	*ACRES OR HECTARES*
OCEAN DISPOSAL	D83	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D84	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR, GALLONS PER HOUR OR LITERS PER HOUR
OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Section III-C.)	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U

UNIT OF MEASURE	UNIT OF MEASURE CODE
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H

UNIT OF MEASURE	UNIT OF MEASURE CODE
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	Q

EXAMPLE FOR COMPLETING SECTION III *(shown in line numbers X-1 and X-2 below)*: *A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400* gallons. The facility also has an incinerator that can burn up to 20 gallons per hour

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S02	600	G	
X-2	T03	20	E	
1	T01	220	U	
2				
3				

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
5				
6				
7				
8				
9				
10				

* Information concerning the date of initial operation of this unit was not available

Continued from page 2

NOTE Photocopy this page before completing if you have more than 26 wastes to list

ID NUMBER (enter from page 1)

WA7890008967

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	F001	6000	P	T01	Evaporation
2	F003				Included with above
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

9011713

III. PROCESSES (continued)

C SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

T01

The 300 Area Solvent Evaporator was a treatment tank which was used to treat radioactively contaminated spent solvents. These solvents were generated in the fuels fabrication process in the 300 Area. The solvents consisted mainly of spent perchloroethylene and tetrachlorethylene. Treatment of the wastes occurred by evaporation in a Brooks Load Lugger tank with steam coils located in the bottom of the tank. The unit was used to treat approximately 600 gallons per year of dangerous wastes. This unit has not received dangerous wastes since November 1985 and will be closed under interim status.

IV. DESCRIPTION OF DANGEROUS WASTES

A. DANGEROUS WASTE NUMBER — Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. ESTIMATED ANNUAL QUANTITY — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non—listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES

For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non—listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non—listed dangerous wastes that possess that characteristic or toxic contaminant.

Note. Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of item IV-D(1) and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER — Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

EXAMPLE FOR COMPLETING SECTION IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non—listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2			T 0 3 D 8 0	included with above

Continued from the front.

IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

The 300 Area Solvent Evaporator was used for the treatment of radioactively contaminated solvents generated during the fuels fabrication effort and associated processes. These wastes consisted of radioactively contaminated solvents F001 and F003. Approximately 6,000 pounds of waste were treated in the evaporator each year.

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail)*.

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*.

VII. FACILITY GEOGRAPHIC LOCATION *This information appears on the attached drawing and photograph.

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*

VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

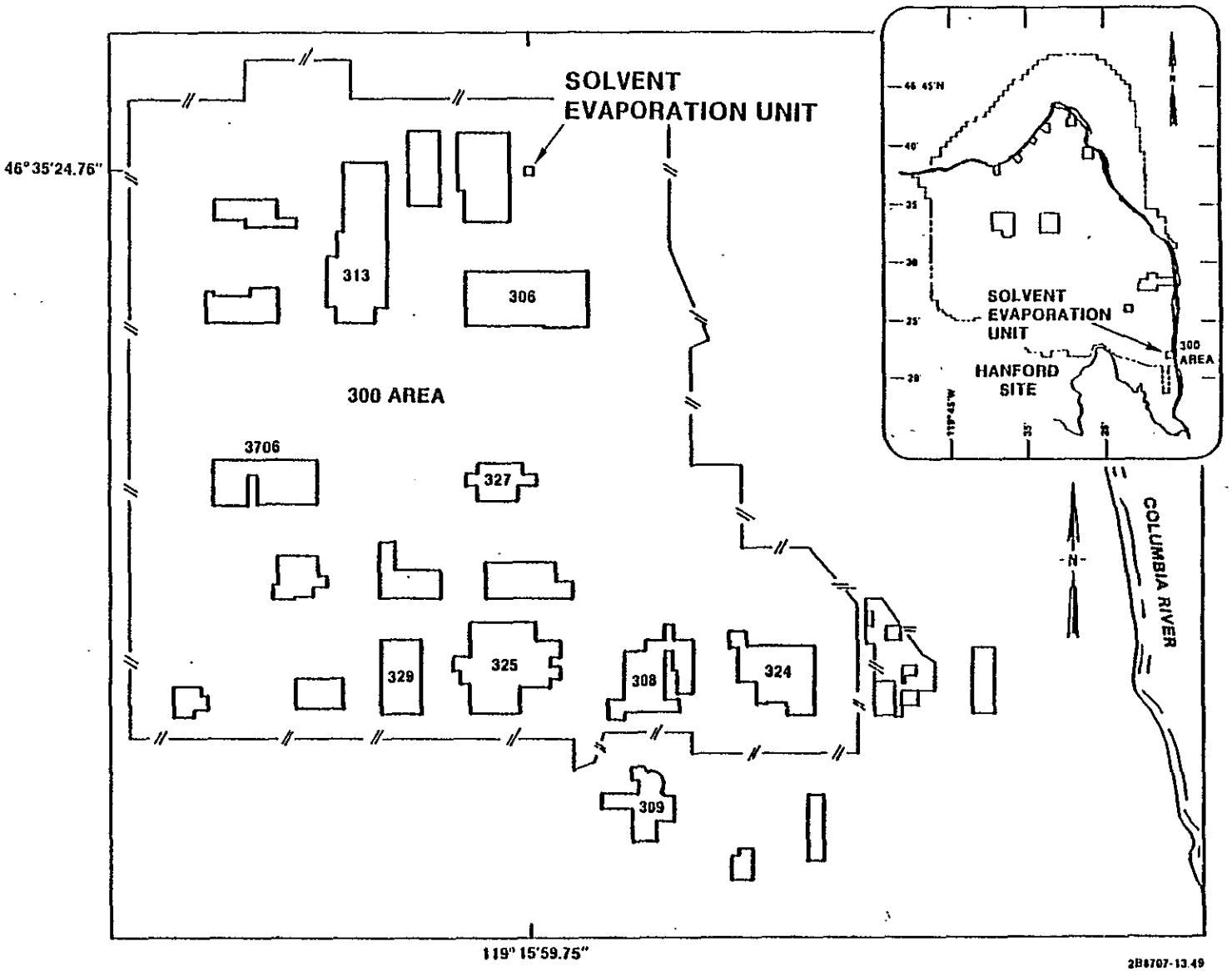
NAME *(print or type)*	SIGNATURE	DATE SIGNED
Michael J. Lawrence Manager, Richland Operations United States Department of Energy		November 16, 1987

X. OPERATOR CERTIFICATION

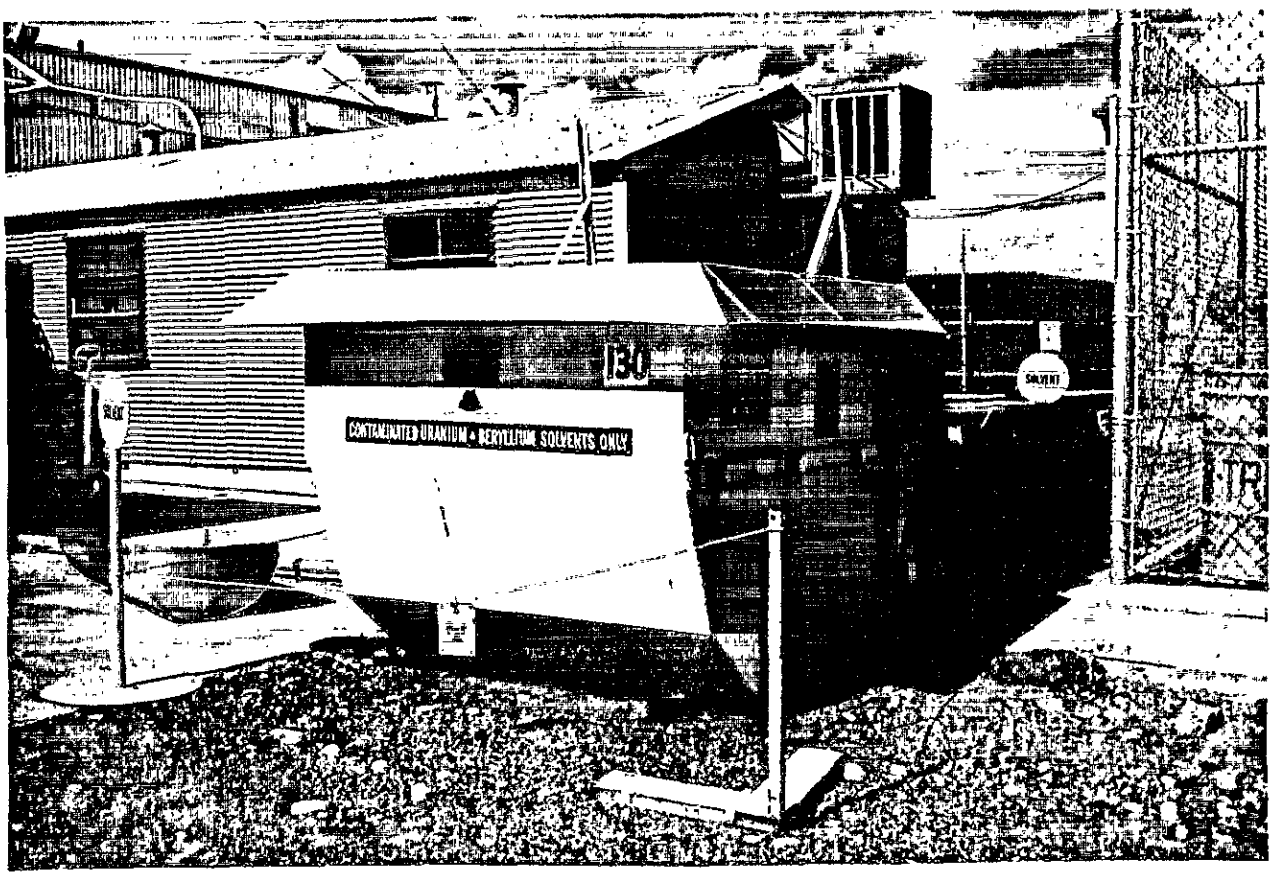
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME *(print or type)*	SIGNATURE	DATE SIGNED
SEE ATTACHMENT		

300 AREA SOLVENT EVAPORATION UNIT



300 AREA SOLVENT EVAPORATION UNIT 300 AREA



46°35'24.76"
119°15'59.75"

8607636-3CN

(PHOTO TAKEN 1985)

2B8707-13.34

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Michael J. Lawrence 11-16-87

Michael J. Lawrence
Manager, Richland Operations
United States Department of Energy

Date

W. M. Jacobi 11/16/87

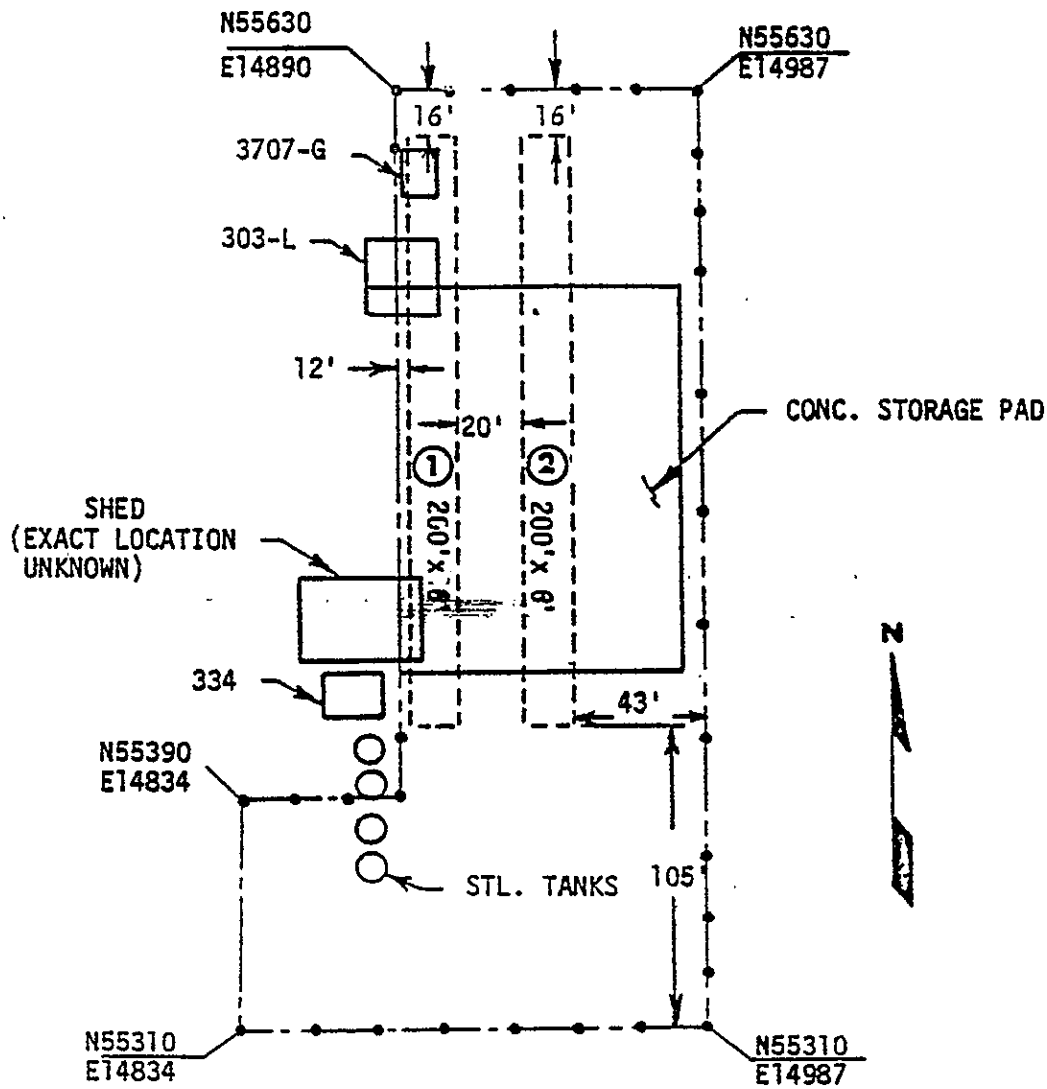
William M. Jacobi
President
Westinghouse Hanford Company

Date

Waste Information Data System (WIDS)

Site Name:	618-1
Status:	Operational: Inactive Radiological: Released
Site Type:	Non-Retrievable Solid Waste
Coordinates:	N55310/W14987, N55360/W14987, N55310/W14834, N55630/W14834
Reference Drawings:	H-3-57210, H-3-32585
Alias Names:	318-1, Solid Waste Burial Ground No. 1
Location:	300 Area - adjacent to the 333 Building in the northeast corner of the 300 Area near the exclusion fence.
Elevations and Depths:	Ground (Above MSL): 119 meters Water Table (Below Grade): 15 meters Site Depth (Below Grade): 6 meters
Waste Catagory:	Mixed Waste
Service Dates:	Start: 1945 End: 1957
Waste Volume:	Not available
Contaminated Soil Volume:	465 cubic meters
Overburden Soil Volume:	621 cubic meters
Site Area:	4,460 square meters
Summary Date:	July 30, 1987
Site Description:	Burial ground consisting of at least two trenches running north-south, 5 meters wide (surface) x 70 meters long x 2.5 meters deep. There are also a series of pits running east-west, 6 meters deep and 4.5 meters wide.
Service History:	This burial ground was active from 1945-1956/57. The site contains uranium, plutonium and fission products from the 300 Area Laboratories.
Associated Structures:	None.

BURIAL GROUND 618-1



A-6400-073.1 (N-2-78)

Table 1: Toxicity Determination

Component	Concentration	WT%	Category	E.C.
Perchloro-ethylene	80%	8.00E+01	X	8.0E+01
1,1,1-tri-chloroethane	10%	1.00E+01	C	1.0E-02
Combination mixture**	10%	1.00E+01	C	1.0E-02
Ethyl acetate			D	
Bromine			None	
Used Oil			None	
Methyl ethyl ketone			D	
Methylene chloride			C	
Petroleum naphtha			None	
Aluminum	10ppm	1.0E-03	None	---
Boron	5ppm	5.0E-04	None	---
Calcium	52ppm	5.2E-03	None	---
Iron	78ppm	7.8E-03	None	---
Lithium	4ppm	4.0E-04	None	---
Beryllium	<0.11ppm*	1.1E-05	X	1.1E-05
Phosphorus	25ppm	2.5E-03	None	---
Silicon	28ppm	2.8E-03	None	---
Sodium	46ppm	4.6E-03	None	---
Zirconium	2ppm	2.0E-04	None	---
		Total Equivalent Concentration		8.0E+01

If the EC is greater than 0.01%, then the solution is regulated for toxicity as WT01 (EHW).
*Calculated Concentration
**The combination mixture will be classified as Toxic C for designating purposes.
Note: Concentration of Uranium was below detection limits (less than 10 micrograms per milliliter)

Table 2: Carcinogenesis Determination

Component	Concentration (WT%)
Perchloroethylene	80%
Beryllium	1.1E-05%
SUM OF WT% OF CARCINOGENS	<85%

Weight percent of total carcinogens must be >1.0% in order to be regulated as WC01 (EHW).

Table 3: Persistence Determination

Component	Concentration (WT%)
Perchloroethylene	80%
1,1,1-trichloroethane	10%
Methylene chloride	<10%
SUM OF WT% OF HALOGENATED HYDROCARBONS	<100%

Weight percent of total halogenated hydrocarbons must be >0.01% in order to be regulated as WP01 (EHW).

SAMPLE

UNC NUCLEAR INDUSTRIES

FUELS OPERATIONS DIVISION
ENVIRONMENTAL CONTAMINATION CONTROL PROCEDURES

Document No	
UNI-M-46	
Date Issued	Page No
7-15-83	1 of 2
Supersedes Issue Dated	
6-1-82	

Subject	Issued By
ECC-114 - WASTE SOLVENT SYSTEM	Fuels Engineering

BASIS

At the present time there is no absolute environmentally acceptable manner (such as a high temperature incinerator) for disposing of waste solvents at Hanford. Most of the solvents from Fuels Operations Division are waste vapor degreasing solvents (trichloroethylene, 1,1,1 trichloroethane and perchloroethylene) and can be contaminated with uranium and Be from degreasing uranium billets and Be-Zr-2 braze rings.

A dumpster has been provided at a remote distance from occupied areas and within a restricted area (east of the 334 Building) and the waste solvents are poured into this dumpster where the excess solvent is allowed to slowly evaporate. When the dried sludge has built-up sufficiently, the sludge and excess solvent will be packaged as "Liquid Organic Material" in 17C drums for disposal as per U contaminated oil (see ECC-104).

CONTROLS

A. Administrative Controls

The use of the solvent dumpster shall be limited to organic solvents that cannot be disposed of in the waste oil system as per ECC-104. (No heavy oils, greases or aqueous solutions.)

B. Inspection of Facilities

Inspection of the solvent dumpster on the east side of 334 Building shall be conducted and documented annually by facility management.

SAMPLE

UNC NUCLEAR INDUSTRIES

FUELS OPERATIONS DIVISION
ENVIRONMENTAL CONTAMINATION CONTROL PROCEDURES

Document No.	
UNI-M-46	
Date Issued	Page No.
7-15-83	2 of 2
Supersedes Issue Dated	
6-1-82	

Subject	Issued By
ECC-114 - WASTE SOLVENT SYSTEM	Fuels Engineering

Revision 1, Dated April 17, 1978:

Basis: Added 1,1,1 trichloroethane to list of degreasing solvents.

Revision 2, Dated September 26, 1980:

Basis: Now require that when the sludge builds up in the waste dumpster it will be barrelled for disposal (not burying the dumpster).

Control B: Deleted DUN-M-31.

Revision 3, Dated June 1, 1982:

Basis: Sludge in dumpster to be disposed of in 17C drums as per ECC-104 not in 17H drums as solid waste.

Revision 4, Dated July 15, 1983:

Basis: Changed "Fuels Production Department" to "Fuels Operations Division."

OBSOLETE AS OF FEB 12 1986 SAMPLE

UNC NUCLEAR INDUSTRIES FUELS PRODUCTION DEPARTMENT OPERATING PROCEDURES	Document No. UNI-M-58	
	Procedure No. E-14	Page No. 1 of 3
	Date Issued 1-11-85	Supersedes Issue Dated 1-20-84
Title: DEGREASER SOLVENT FILL AND DISPOSAL SYSTEM	Issued By FUELS OPERATIONS	

I. BASIS

Clean perchloroethylene for filling the degreasers is obtained in drums from 303-F. A portable pump is used to transfer from the drum into the degreaser.

No. 3 degreaser uses solvent: 1,1,1-trichloroethane. This solvent is received in a 54 gallon drum and is stored near the degreaser. The solvent is pumped from the drum into the degreaser with a portable pump. The pump is stored behind tank #24.

II. REFERENCE

DUN-5601
UNI-M-38
Job Hazard Breakdown #33-1

III. EQUIPMENT NEEDED

Bump cap
Acid goggles
Coveralls
Safety shoes or toe protectors
Leather or rubber gloves
Oil sorbent sheets

IV. PROCEDURE

A. Filling of the Degreasers

When solvent is needed in a degreaser, the chem bay chief operator will bring it into the 333 Building in 55 gallon drums and pump it into the degreaser.

CAUTION: The degreasers using perchlorethylene receive the clean solvent into the cold side, it is possible to overfill them as the perchlorethylene goes into the degreaser faster than it flows from the cold side to the hot side. Due to this delay in the perchlorethylene moving from the hot side, shut off perchlorethylene fill valve, when the level in the hot side is approximately 1" below the desired level. This will prevent overfilling. Wait about 2 minutes, check solvent level and add more if needed.

Review Dates and Initials						

Prepared by	Reviewed by	Approved by
[signature] Supervisor, Fuels Operations	[signature] 1/2/85	[signature] 1-9-85 Manager, Fuels Operations

9 0 1 1 7 / 1 1 4 4

Title

DEGREASER SOLVENT FILL AND DISPOSAL SYSTEM

B. Emptying Degreaser

Each degreaser (except end cap and support etch) is equipped with a spray wand and a drain line to remove the solvent. Use the same pump to remove solvent from #3 degreaser that was used to fill it.

1. Close overflow line and boil off solvent from vapor zone to condensate storage tank. Shut off heater and let vapor zone cool down.

2. Pump out cold reservoir by using the spray wand. Pump into barrels. Return the spray wand properly to its holder immediately upon completion of pumping.

3. Pump out cool solvent in boiling side by attaching a portable pump to drain line. Pump into barrels (old black trichloroethane barrels, which are stored next to 334 by the waste solvent dumpster, are used to transfer the dirty solvent).

C. A waste solvent dumpster is located east of the 334 Building. Transfer barrels of dirty solvent to waste solvent dumpster and pour into dumpster.

D. If the solvent level in the dumpster is high, speed up the evaporation by using the steam coils:

1. Set up "Warning Steam Hose" signs in 334 Building and east of 334 Building near hose.

2. Turn on steam in 334 Building.

3. Allow solvent to evaporate to desired level and then turn off steam.

OBSOLETE AS OF FEB 19 1986 SAMPLE

UNC NUCLEAR INDUSTRIES FUELS PRODUCTION DEPARTMENT OPERATING PROCEDURES	Document No. UNI-M-58	
	Procedure No. E-14	Page No. 3 of 3
	Date Issued 1-11-85	Supersedes Issue Dated 1-20-84
Title DEGREASER SOLVENT FILL AND DISPOSAL SYSTEM	Issued By FUELS OPERATIONS	

V. ACCIDENTAL SPILLS OR LEAKS

A. If any solvent accidentally gets on you, follow the emergency procedure as defined in Chemical Bulletins #3 and #26 from UNI-M-38.

B. If any solvent is spilled onto the ground or into a trench, notify supervision immediately. If oil sorbant sheets are handy use them to contain the spill (even in a trench with water) and then notify supervision. Supervision will arrange to properly dispose of the solvent soaked sheets.

WP#0025E

Review Dates and Initials							

Prepared by	Reviewed by	Approved by
P. Nicki Supervisor, Fuels Operations	1/2/85	1-9-85 Manager, Fuels Operations

A-5300-252 (2-82)

OBSOLETE AS OF FEB 11 1985

SAMPLE

UNC NUCLEAR INDUSTRIES FUELS PRODUCTION DEPARTMENT OPERATING PROCEDURES	Document No. UNI-M-58	
	Procedure No. E-14	Page No. 1 of 4
	Date Issued 1-20-84	Supersedes Issue Dated 9-18-79
Title DEGREASER SOLVENT FILL AND DISPOSAL SYSTEM	Issued By FUELS OPERATIONS	

I. BASIS

Clean perchloroethylene for filling the degreasers is obtained from the 313 pumping station. It can either be pumped directly to the degreasers or it can be put into the solvent holding tank in the chem bay mezzanine and later be used to fill the degreaser by gravity flow. The normal procedure is to use the percholorethylene from the solvent still storage tank.

No. 3 degreaser uses solvent: 1,1,1-trichloroethane. This solvent is received in a 54 gallon drum and is stored near the degreaser. The solvent is pumped from the drum into the degreaser with a portable pump. The pump is stored behind tank #24.

II. REFERENCE

DUN-5601
UNI-M-58
Job Hazard Breakdown

III. EQUIPMENT NEEDED

Bump cap
Acid goggles
Coveralls
Safety shoes or toe protectors
Leather or rubber gloves

IV. PROCEDURE

A. To obtain fresh perchlorethylene from the 313 Building, contact the 313 fuel recovery operator and notify him that you are ready to receive perchlorethylene. Open valve T-1 and watch the storage tank until it is full. Shut off valve T-1 and tell the 313 operator that the pumping is completed. Valve T-2 is in the supply line to the degreasers and is left open.

B. Filling of the Degreasers

When perchlorethylene is desired in a degreaser in the 333 Building, open the fill valve located on the degreaser. Each valve is numbered as listed:

Review Dates and Initials						

Prepared by 12-12-83 Supervisor, Fuels Operations	Reviewed by 12/27/83	Approved by Manager, Fuels Operations

A-5300-262 (2-82)

OBSOLETE AS OF FEB 11 1985

SAMPLE

No. 1 degreaser (vacublast) valve #T-7
No. 2 degreaser (final etch) valve #T-11.
No. 3 degreaser (end cap and support etch) filled from barrel of 1,1,1-trichloroethane
No. 4 degreaser (billet cleaning) valve #T-4
No. 5 degreaser (component cleaning) valve #T-13
No. 6 degreaser (billet lube) valve #T-16

Observe the filling of the degreaser and shut off the valve when the desired level is reached.

CAUTION: The degreasers using perchlorethylene receive the clean solvent into the cold side, it is possible to overfill them as the perchlorethylene goes into the degreaser faster than it flows from the cold side to the hot side. Due to this delay in the perchlorethylene moving from the hot side, shut off perchlorethylene fill valve, when the level in the hot side is approximately 1" below the desired level. This will prevent overfilling. Wait about 2 minutes, check solvent level and add more if needed.

C. Emptying Degreaser

Each degreaser (except #3) is equipped with a spray wand and a drain line to remove the solvent. Use the same pump to remove solvent from #3 degreaser that was used to fill it.

1. Pump out cold reservoir by using the spray wand. Pump into barrels.

2. Pump out cool solvent in boiling side by attaching a portable pump to drain line. Pump into barrels.

   a. Fuels Maintenance will supply pump, fitting and make connections.
   b. Barrels supplied by Materials Services.

D. A waste solvent dumpster is located east of the 334 Building. Transfer barrels of dirty solvent to waste solvent dumpster and pour into dumpster.

UNC NUCLEAR INDUSTRIES

FUELS PRODUCTION DEPARTMENT
OPERATING PROCEDURES

Title

DEGREASER SOLVENT FILL AND DISPOSAL SYSTEM

Issued By

FUELS OPERATIONS

E. If the solvent level in the dumpster is high, speed up the evaporation by using the steam coils:

1. Set up "Warning Steam Hose" signs in 334 Building and east of 334 Building near hose.

2. Turn on steam in 334 Building.

3. Allow solvent to evaporate to desired level and then turn off steam.

WP#0025E

Review Dates and Initials						

Prepared by	Reviewed by	Approved by
Supervisor, Fuels Operations 12-12-83	10/31/83	Manager, Fuels Operations

A-5300-262 (2-82)

FEB 11 1985

SAMPLE

UNC NUCLEAR INDUSTRIES

FUELS PRODUCTION DEPARTMENT
OPERATING PROCEDURES

Document No.	
UNI-M-58	
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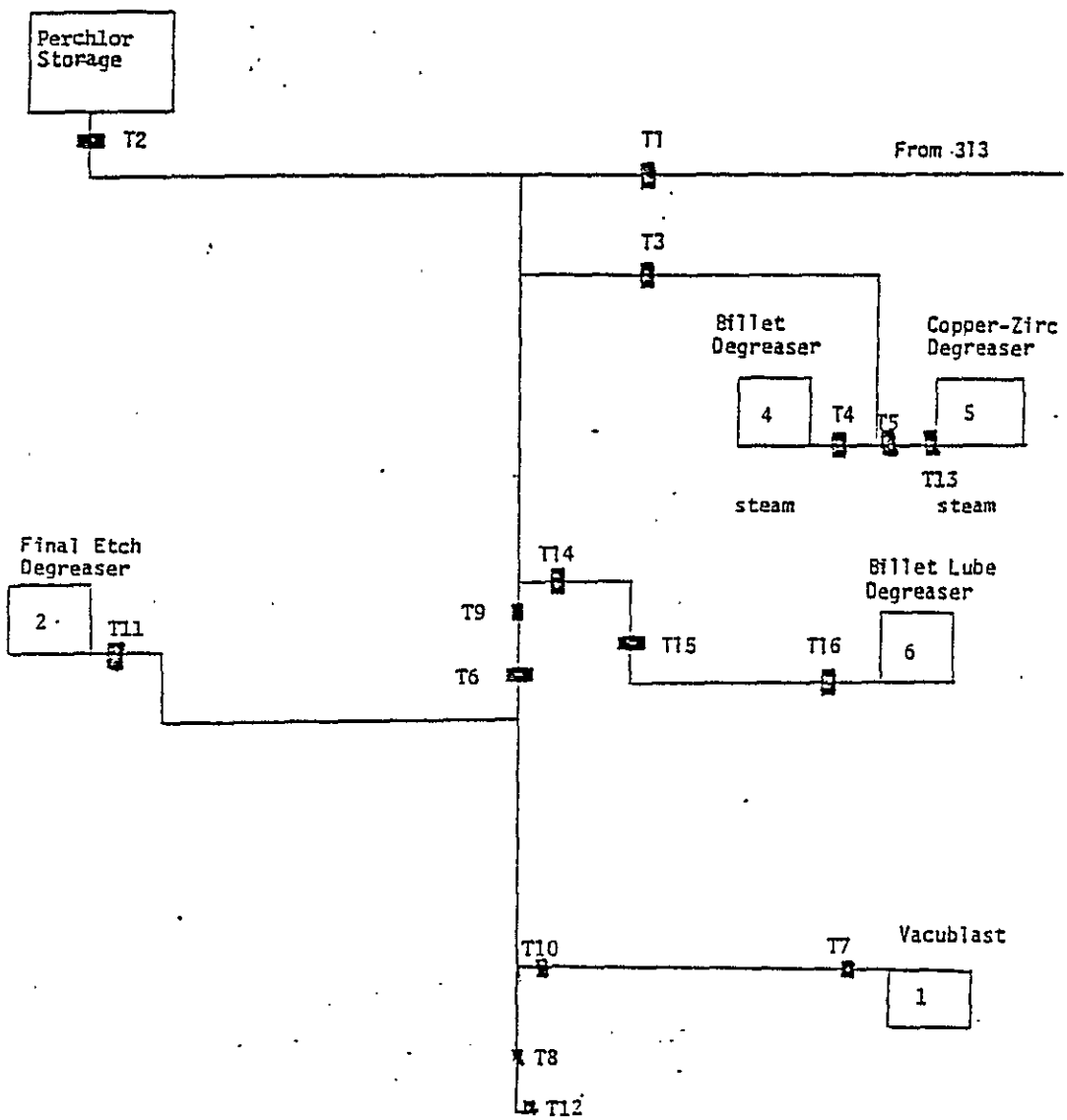
E-14	4 of 4
Date Issued	Supersedes Issue Dated
1-20-84	9-18-79

Title

DEGREASER SOLVENT FILL AND DISPOSAL SYSTEM

Issued By

FUELS OPERATIONS



Review Dates and Initials						

Prepared by	Reviewed by	Approved by
1-16-84	10/31/83	
Supervisor, Fuels Operations		Manager, Fuels Operations

A-5300-282 (2-82)

Title	Procedure No.
DEGREASER SOLVENT FILL AND DISPOSAL SYSTEM	E-14

I. BASIS

Clean perchloroethylene for filling the degreasers is obtained from the 313 pumping station. It can either be pumped directly to the degreasers or it can be put into the solvent holding tank in the chem bay mezzanine and later be used to fill the degreasers by gravity flow. The normal procedure is to use the perchloroethylene from the solvent still storage tank.

No. 3 degreaser uses solvent: 1,1,1-trichloroethane. This solvent is received in a 54 gallon drum and is stored near the degreaser. The solvent is pumped from the drum into the degreaser with a portable pump. The pump is stored behind tank #24.

II. REFERENCE

DUN-5601
UNI-M-38
Job Hazard Breakdown

III. EQUIPMENT NEEDED

1. Acid goggles
2. Coveralls
3. Safety shoes and toe protectors
4. Leather or rubber gloves

IV. PROCEDURE

A. To obtain fresh perchloroethylene from the 313 Building, contact the 313 fuel recovery operator and notify him that you are ready to receive perchloroethylene. Open valve T-1 and watch the storage tank until it is full. Shut off valve T-1 and tell the 313 operator that the pumping is completed. Valve T-2 is in the supply line to the degreasers and is left open.

B. Filling of the Degreasers

When perchloroethylene is desired in a degreaser in the 333 Building, open the fill valve located on the degreaser. Each valve is numbered as listed:

No. 1 degreaser (vacublast) valve #T-7
No. 2 degreaser (final etch) valve #T-11
No. 3 degreaser (end cap and support etch) filled from barrel of 1,1,1 trichloroethane
No. 4 degreaser (billet cleaning) valve #T-4
No. 5 degreaser (component cleaning) valve #T-13
No. 6 degreaser (billet lube) valve #T-16

Title	Procedure No.
DEGREASER SOLVENT FILL AND DISPOSAL SYSTEM	E-14

Observe the filling of the degreaser and shut off the valve when the desired level is reached.

CAUTION: All of the degreasers receive the clean perchloroethylene into the cold side, it is possible to overfill them as the perchloroethylene goes into the degreaser faster than it flows from the cold side to the hot side. Due to this delay in the perchloroethylene moving from the cold side to the hot side, shut off perchloroethylene fill valve, when the level in the hot side is approximately 1" below the desired level. This will prevent overfilling. Wait about 2 minutes, check solvent level and add more if needed.

C. Emptying Degreaser

Each degreaser (except #3) is equipped with a spray wand and a drain line to remove the solvent. Use the same pump to remove solvent from #3 degreaser that was used to fill it.

1. Pump out cold reservoir by using the spray wand. Pump into barrels.

2. Pump out cool solvent in boiling side by attaching a portable pump to drain line. Pump into barrels.

   a. Fuels Maintenance will supply pump, fitting and make connections.
   b. Barrels supplied by Material Services.

D. A waste solvent dumpster is located east of the 334 Building. Transfer barrels of dirty solvent to waste solvent dumpster and pour into dumpster.

E. If the solvent level in the dumpster is high, speed up the evaporation by using the steam coils:

1. Set up "Warning Steam Hose" signs in 334 Building and east of 334 Building near hose.

2. Turn on steam in 334 Building.

3. Allow solvent to evaporate to desired level and then turn off steam.

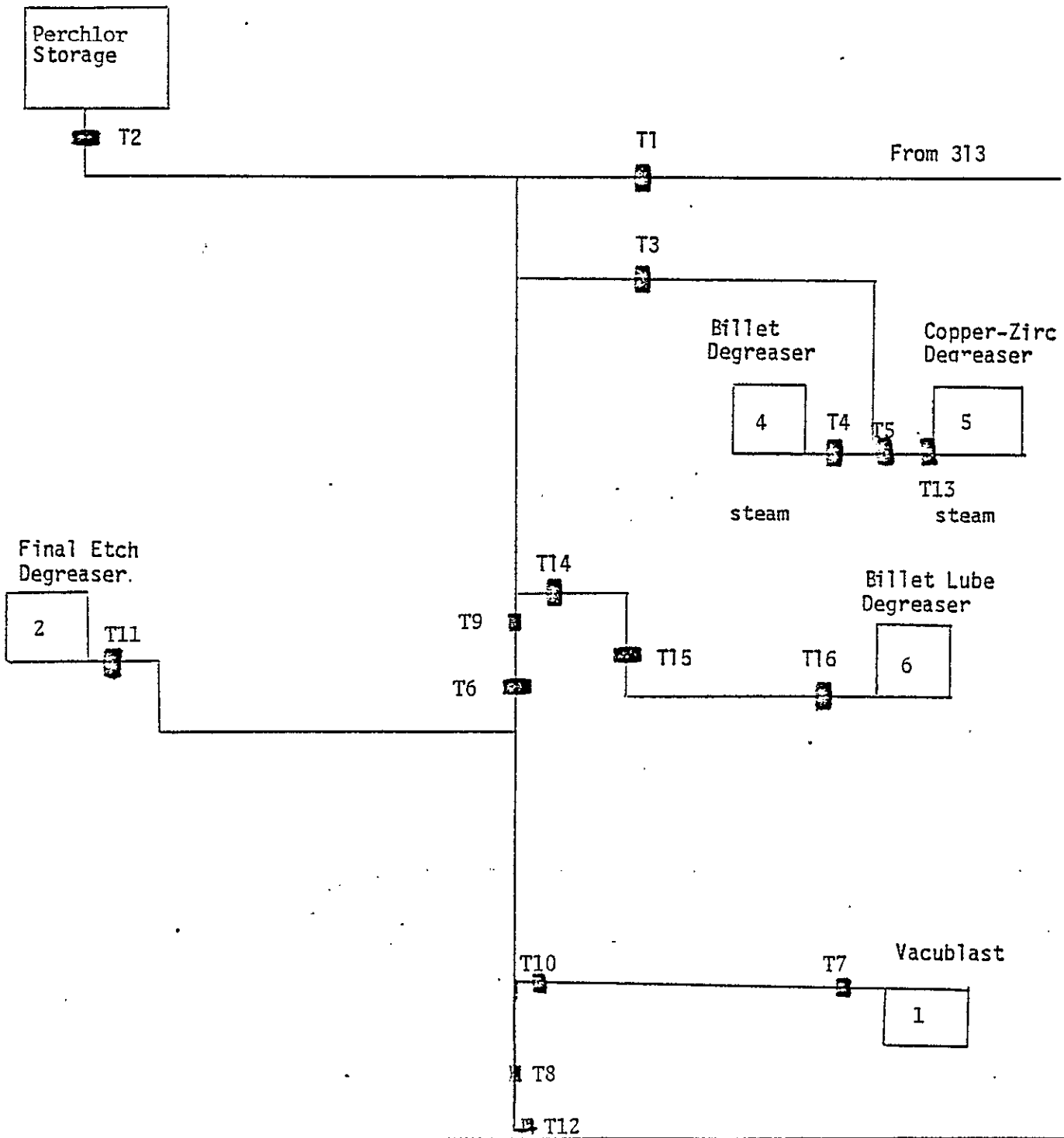
OBSOLETE AS OF FEB 07 1984

SAMPLE

FUELS PRODUCTION DEPARTMENT
OPERATING PROCEDURES
FUELS OPERATION

UNI-M-58

Title	Procedure No.
DEGREASER SOLVENT FILL AND DISPOSAL SYSTEM	E-14



Reviewed by: [signature] Date: 8-30-79

Prepared By	Approved By	Date Issued.	Supersedes Issue Dated	Page No.
H D Rice	[signature]			

FUELS PRODUCTION DIVISION
OPERATING PROCEDURES
SHOP OPERATIONS

SAMPLE

UNI-M-58

Title	Procedure No.
PERCHLOR FILL AND DISPOSAL SYSTEM	CA-748 E-14

OBSOLETE AS OF OCT 0 1 1979

I. BASIS

Clean perchlor for filling the degreasers is obtained from the 313 pumping station. It can either be pumped directly to the degreasers or it can be put into the perchlor still holding tank in the chem bay meazzanine and later be used to fill the degreasers by gravity flow. The normal procedure is to use the perchlor from the perchlor still storage tank.

II. REFERENCE

DUN-5601
UNI-M-38
DUN-5750
Job Hazard Breakdown

III. EQUIPMENT NEEDED

1. Acid goggles.
2. Coveralls
3. Safety shoes and toe protectors.
4. Leather or asbestos gloves.

IV. PROCEDURE

A. To obtain fresh perchlor from the 313 Building, contact the 313 fuel recovery operator and notify him that you are ready to receive perchlor. Open valve T-1 and watch the storage tank until it is full. Shut off valve T-1 and tell the 313 operator that the pumping is completed.

B. Filling of the Degreasers

When perchlor is desired in a degreaser in the 333 Building, open the valve nearest the degreaser. Observe the filling of the degreaser and shut off the valve when the desired level is reached.

CAUTION: All of the degreasers receive the clean perchlor into the cold side, it is possible to overfill them as the perchlor goes into the degreaser faster than it flows from the cold side to the hot side. Due to this delay in the perchlor moving from the cold side to the hot side, shut off perchlor fill valve before the desired level is reached to prevent overfilling.

Prepared By	Approved By	Date Issued	Supersedes Issue Dated	Page No.
K. D. Rice Supv., Shop Operations	Mgr, Shop Operations	6-20-78	4-11-77	1 of 3

Title	Procedure No.
PERCHLOR FILL AND DISPOSAL SYSTEM	CA-748 E-14

C. Emptying Degreaser

1. Pump out cold reservoir by using spray wand or attaching a portable pump to drain line. Pump into barrels.

2. Pump out cool solvent in boiling side by using supplied pump or attaching a portable pump to drain line. Pump into barrels.

D. Transfer barrels of dirty solvent to waste solvent dumpster and pour into dumpster.

E. If the solvent level in the dumpster is high, speed up the evaporation by using the steam coils:

1. Uncoil hoses at dumpster and in 334 Building and attach.

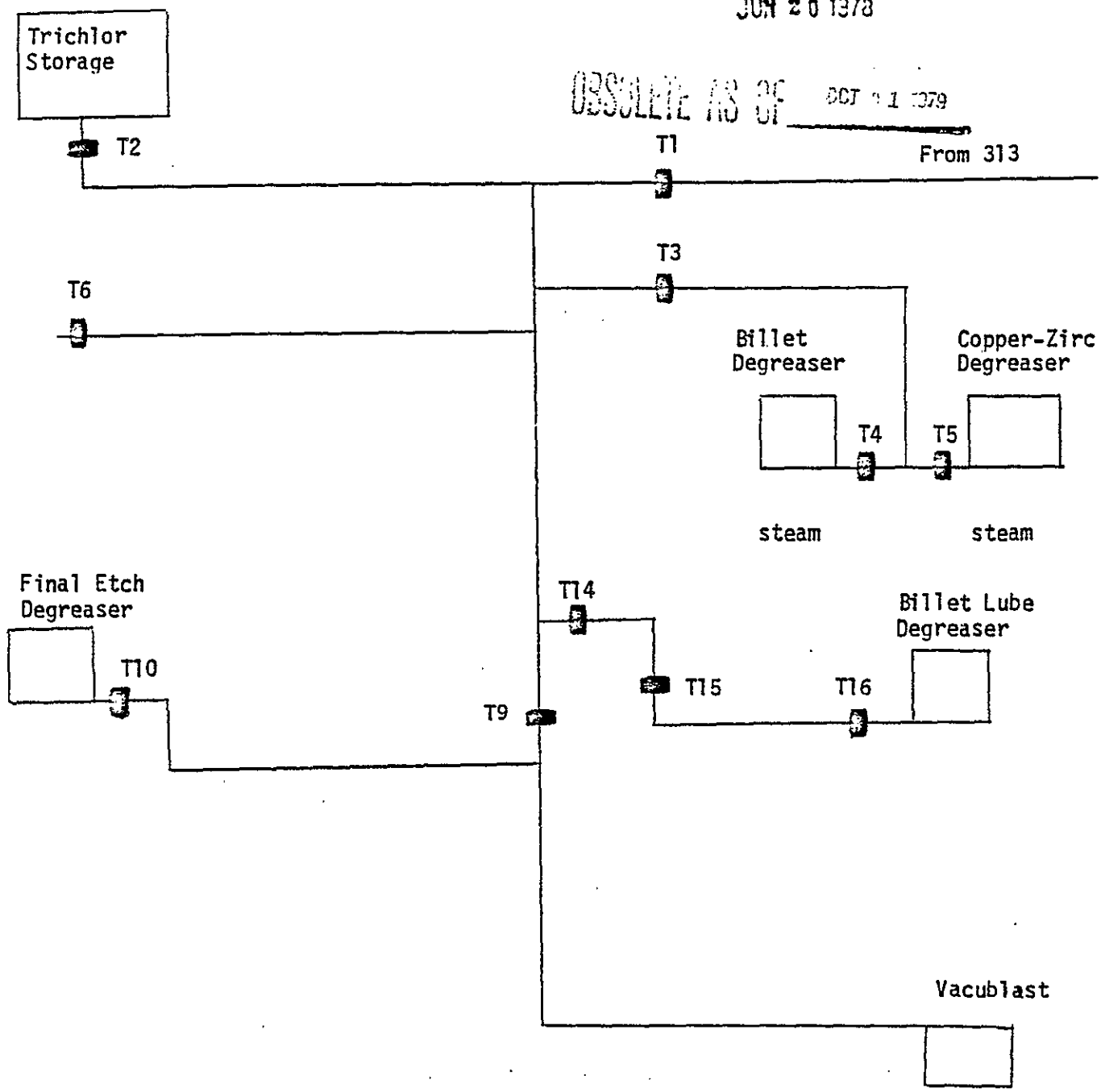
2. Set up "Warning Steam Hose" signs in 334 Building and east of 334 Building near hose.

3. Turn on steam in 334 Building.

4. Allow solvent to evaporate to desired level and then turn off steam.

5. Let steam hose cool before disconnecting and coiling up hose.

TRICHLOR FILL AND DISPOSAL SYSTEM



SAMPLE

FUELS PRODUCTION DIVISION
OPERATING PROCEDURES
SHOP OPERATIONS

OBSOLETE AS OF JUN 16 1977
UNI-M-58

Title	Procedure No
END CLOSURE - TRICHLOR FILL SYSTEM	CA-748 E-14

I. BASIS

Clean trichlor for filling the degreasers is obtained from the 313 pumping station. It can either be pumped directly to the degreasers or it can be put into the trichlor still holding tank in the chem bay mezzanine and later be used to fill the degreasers by gravity flow. The normal procedure is to use the trichlor from the trichlor still storage tank.

II. PROCEDURE

A. To obtain fresh trichlor from the 313 Building, contact the 313 fuel recovery operator and notify him that you are ready to receive trichlor. Open valve T-1 and watch the storage tank until it is full. Shut off valve T-1 and tell the 313 operator that the pumping is completed.

B. Filling of the Degreasers

When trichlor is desired in one of the seven degreasers in the 333 Building, open the valve nearest the degreaser. Observe the filling of the degreaser and shut off the valve when the desired trichlor level is reached.

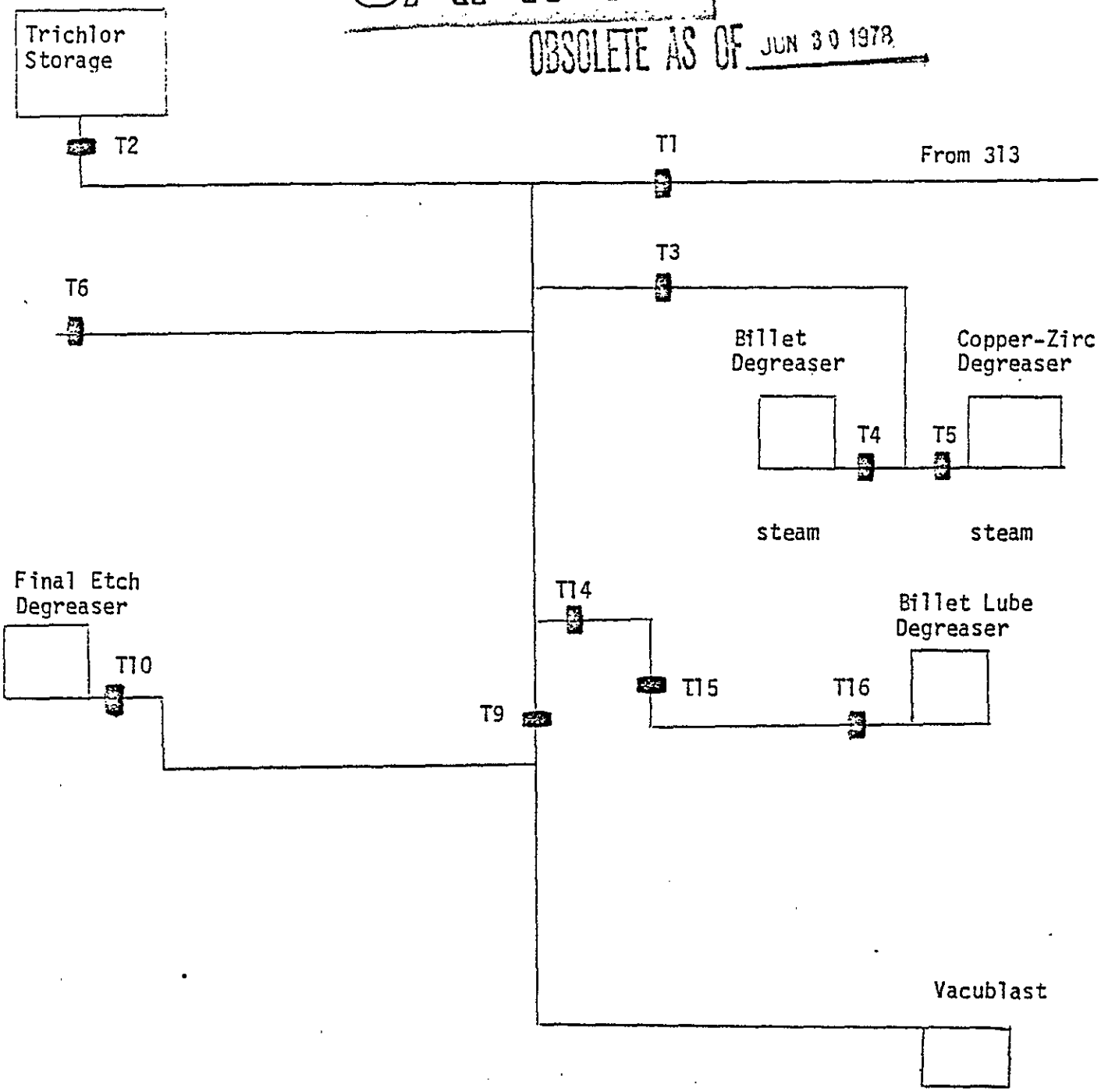
CAUTION: All of the degreasers receive the clean trichlor into the cold side, it is possible to overfill them as the trichlor goes into the degreaser faster than it flows from the cold side to the hot side. Due to this delay in the trichlor moving from the cold side to the hot side, shut off trichlor fill valve before the desired level is reached to prevent overfilling.

Prepared By	Approved By	Date Issued	Supersedes Issue Dated	Page No.
A. N. Stinson Supv. Shop Operations	H. C. Money Mgr. Shop Operations	1/16/75	1/12/70	1 of 2

TRICHLOR FILL SYSTEM

UNI-M-58

Ca-748
E-14



SAMPLE

FUELS PRODUCTION DIVISION
OPERATING PROCEDURES
SHOP OPERATIONS

OBSOLETE AS OF JUN 30 1978

UNI-M-58

Title	Procedure No.
PERCHLOR FILL SYSTEM	CA-748 E-14

I. BASIS

Clean perchlor for filling the degreasers is obtained from the 313 pumping station. It can either be pumped directly to the degreasers or it can be put into the perchlor still holding tank in the chem bay meazzanine and later be used to fill the degreasers by gravity flow. The normal procedure is to use the perchlor from the perchlor still storage tank.

II. REFERENCE

DUN-5601
UNI-M-38
DUN-5750
Job Hazard Breakdown

III. EQUIPMENT NEEDED

1. Acid goggles.
2. Coveralls
3. Safety shoes and toe protectors.
4. Leather or asbestos gloves.

IV. PROCEDURE

A. To obtain fresh perchlor from the 313 Building, contact the 313 fuel recovery operator and notify him that you are ready to receive perchlor. Open valve T-1 and watch the storage tank until it is full. Shut off valve T-1 and tell the 313 operator that the pumping is completed.

B. Filling of the Degreasers

When perchlor is desired in a degreaser in the 333 Building, open the valve nearest the degreaser. Observe the filling of the degreaser and shut off the valve when the desired level is reached.

CAUTION: All of the degreasers receive the clean perchlor into the cold side, it is possible to overfill them as the perchlor goes into the degreaser faster than it flows from the cold side to the hot side. Due to this delay in the perchlor moving from the cold side to the hot side, shut off perchlor fill valve before the desired level is reached to prevent overfilling.

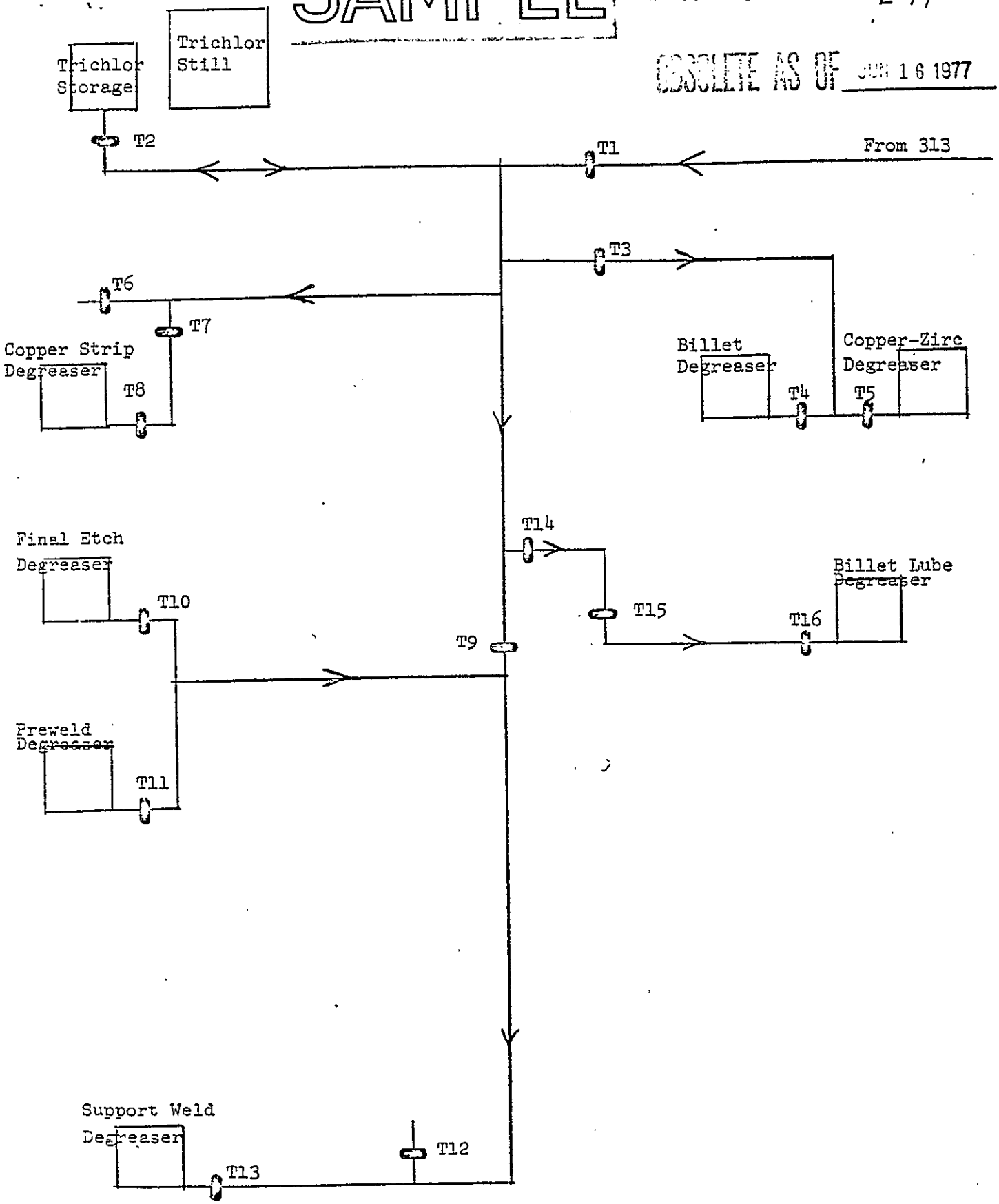
Prepared By	Approved By	Date Issued	Supersedes Issue Dated	Page No.
K. D. Rice Supv., Shop Operations	P. V. Tomey Mgr., Shop Operations	4-11-77	1-16-75	1 of 2

TRICHLOR FILL SYSTEM

SAMPLE

UNI-M-58 CA-748 E-14

OBSOLETE AS OF JUN 16 1977



SAMPLE

UNC NUCLEAR INDUSTRIES

Page 1 of _____

FUELS OPERATIONS

☐ 333 ☐ 313 ☒ 334A

PROCESS WORK REQUEST NO. B-441

To: Production Control

From: Process Control

No. Of Elements Involved: N/A

Model: N/A

Dates: From - Aug., 1985 To - Nov., 1985

QAL Level: —

MATERIAL USE
☐ Customer Use
☒ Noncustomer Use

SPECIFICATIONS WAIVED
☐ Mfg. Proc. Spec. No. _____
☐ Engr. Spec. No. _____
☒ None

Test ☐ Specification Change ☐

Purpose And Justification

Provide necessary instructions for the solidification and disposal of accumulated solvent sludges in the waste solvent evaporator behind the 334-A Building. The volume of sludge is starting to limit the capacity of the evaporator to receive additional solvent wastes. The accumulated sludges need to be disposed of to allow treatment of future solvent wastes.

Special Equipment And Material

Use of special chemical Gypsum formulation to solidify wastes.

Special Procedures And Responsibility

Production Control personnel will recover the evaporator sludges and under direction of Fuels Engineering treat the waste in 30 gallon drums as detailed in the attached procedure. Overpack and shipping instructions are outlined in the attached compliance checksheet.

An RWP will be prepared by Production Control to prevent contamination release and augment sanitary measures.

APPROVALS		INITIATOR
Director, Fuels Engineering: E.V. Padgett 8-7-85	Manager, Fuels Quality Assurance: H.E. Walker 8-7-85	HF Jensen Date 8/7/85
Manager, Fuels Production: N/A	Supervisor, Fuels Inspection: N/A	Director, Fuels Manufacturing: 8-8-85
Manager, Process Control: W.L. Clemmons 8/7/85	Manager, Production Control: 8/8/85	

BM-5400-185 (1-84)

9011711161

SAMPLE

PWR B-441
Attachment 1

Procedure for the Solidification of Perchlorethylene Solvent Wastes

1. Place a 30 gallon drum in the catch basin next to the perchlor evaporator.
2. Using a hand-held electric pump, transfer 13 gallons of waste from the evaporator into the 30 gallon drum.
3. Add 1-1/2 gallons of Envirostone liquid emulsifier and 6-1/2* gallons of water, then mix with a clamp-on agitator to create a uniform emulsion.
4. Add 160 lbs. of Envirostone cement while mixing.
5. Mix for 10-15 minutes, then let the mixture set up.
6. After the mixture has hardened, add Dolomite to the top of the 30 gallon drum and attach lid.
7. Overpack the 30 gallon drum in a 55 gallon non-TRU drum and place Dolomite in between the drums.
8. Place the lid on the 55 gallon drum and torque the locking ring bolt to 40 ft-lbs.minimum.
9. Label the 55 gallon drum per the attached Burial Compliance checksheet.
10. Place the drums in the waste materials storage area east of the 333 Bldg. until shipment to RHO.

* Amount of water may be subject to change based on water already present in waste.

SAMPLE

RISK LEVEL EVALUATION

CONCERN	Minor (Use Control Factor 1-7)	Moderate (Use Control Factor 1-4)	Major (Use Control Factor 1-2)
Personal Injury	4		
Equipment Damage	7		
Violation of Nuclear Safety Specification	7		
Fire from Pyrophoric Metals	7		
Environmental Release	4		

SPILLS AND POSSIBLE SKIN IRRITATION TO PERSONNEL. PROPER CARE IN HANDLING SHOULD MINIMIZE ANY SERIOUS INCIDENT

W L Clemens
8/7/85

9011707111163

SAMPLE

ATTACHMENT I

HAZARD ANALYSIS CHECKLIST

Job To Be Performed

Building 334A Date AS NECESSARY Shift DAY -

Description of Job: SOLIDIFY AND PACKAGE SOLVENT EVAPORATOR WASTES PER PWR B-441

Associated Hazards*

toxic chemicals release YES

flammables/explosives NO

asbestos release NO

nuclear safety requirement NO

solid, liquid, gaseous release to environment POSSIBLE

radiological work NO

high temperature NO

hazard atmosphere NO

pyrophoric material NO

protective clothing requirement YES

*Indicate "Yes" or "No" for each hazard item. If "Yes", the special instruction section shall indicate how that hazard is to be controlled.

Special Instruction: TIN SOLVENT SLUDGES CONTAIN PERCHLOROETHYLENE SOLVENT COUPLED WITH ACCUMULATIONS OF VARIOUS ORGANIC CONTAMINANTS - CARE MUST BE EXERCISED TO PREVENT SPILLAGE AND SKIN CONTAMINATION

Approval: W H Clemmons 8/7/84
Section Manager

Revised 8/28/84

9011170164

SAMPLE

TEMPORARY RADIATION WORK PROCEDURE
(3 Rem/Hr or Less)

Area	Building	Valid Date of Procedure	Temporary RWP No.
300	334-A	From: 8-9-85 To: 12-9-85	300-1-85

Location

Description of Work: Solidification and Disposal of Solvent Sludges

RADIOLOGICAL CONDITIONS

Low Level Contamination Liquid Sludge

RADIATION MONITORING REQUIREMENTS

☐ Continuous Rm ☒ Intermittent

Contact Rm

☒ Before Entering Zone

☒ If Conditions Change

☒ Release Survey of Personnel and Equipment

Phone#-6-3311

Pax# - 816

INSTRUCTIONS

1. Comply with all Fuels Operations "Employee Radiation Zone Rules".
2. Temporary Radiation Zones to be set up for pumping, and storage of drums of waste.
3. Waste drums (smears) shall be <200 cpm., and packaged per UNI-M-29.
4. Comply with Process Work Request No. B-441.

PROTECTIVE EQUIPMENT REQUIREMENTS

HEAD
- ☒ Cap
- ☐ Hood
- ☐ Rubber
- ☐ Plastic
- ☐ Face Shield
- ☐ _____

BODY
- ☒ 1 Pr. Coveralls
- ☐ 2 Pr. Coveralls
- ☒ No Personal Outer Clothes
- ☐ Waterproof Outer Layer
- ☐ _____

HANDS
- ☐ Canvas Gloves
- ☐ Surgeons Gloves
- ☒ Rubber Gauntlets
- ☐ Canners Gloves
- ☐ _____

FEET
- ☒ Canvas Boots
- ☐ Shoe Covers
- ☒ Rubbers
- ☐ British Leggings
- ☐ _____

RESPIRATORY
- ☐ Full Face
- ☐ Air Supplied Hood
- ☐ Fresh Air
- ☐ SCBA
- ☒ Protection as specified by Rm
- ☐ _____

PERSONNEL METERS
- ☒ TLD
- ☐ PADI
- ☐ PARD
- ☐ Self-Reading Pencils
- ☐ Finger Ring
- ☐ _____

APPROVALS

JK Marshall 8-14-85	C F Lamm 8-16-85
Ga Hanson 8/15/85	

9011170116

UNC NUCLEAR INDUSTRIES

FUELS MANUFACTURING DEPARTMENT
OPERATING PROCEDURES

Document No.	
UNI-M-57 REV1	
Procedure No.	Page No.
D-411	1 of 9
Date Issued	Supersedes Issue Date
11-12-85	NEW

Title
SOLIDIFYING AND PACKAGING OF WASTE SOLVENTS

Issued By
PRODUCTION CONTROL

A. PURPOSE

This procedure describes the process for solidifying waste solvents. Solidification is necessary for the disposal of this material.

B. DESCRIPTION

Solvents are used in the manufacturing process of N Reactor fuels. The solvents are used in degreasers to clean the fuel elements and are routinely changed out and pumped into 55-gallon drums for transport. The drum of waste solvent is then solidified.

Waste solvents are solidified by mixing the solvents with cement and liquid emulsifiers. The solidified solvents are packaged in 55-gallon 17H "Non-Tru" drums for disposal.

C. REFERENCES

DUN-5601, "Manufacturing Process Specifications".
DUN-M-29, "N-Fuels Process Control Procedures".
UNI-M-32, "Radiation Work Procedures".
UNI-M-38, "Industrial Safety Manual".
UNI-M-59, "Job Hazard Breakdown".
RHO-MA-222 REV1, "Hanford Radioactive Solid Waste Packaging, Storage, and Disposal Requirements".

D. EQUIPMENT

30 Gallon 17-H Drums	Leather Gloves	55 Gallon 17-H Drums
Rubber Gloves	Absorbent Material	SWP Clothing
Drum Labels	Dolomite	Envirostone Cement
Drum Pumps	Catch Basin	Drum Agitator
Envirostone Liquid Emulsifier	Extension Cord	Water Hose
Forklift w/drum gipping attach.	Air Hose	Bucket

Review Dates and Initials						
Prepared by / Supervisor	Reviewed by	Approved by
---	---	---
11/12/85 / 11/12/85	11-12-85	11/12/85

A-5300-285 (3-83)

Tape Measure — Rubber Shoe Covers — Paint Stick Marker
Forklift Transport Tray — Bump Cap — Goggles

E. PROCEDURE

1. Transport of Solvent Drums

a. A Metal Operator, Production Control, shall transport the solvent drums to the solidification location. The Operator shall:

1) Assure that the durms are sealed before attempting to move them.

2) Assure that a RM survey has been done on the drum and a "Conditional Radiation Release" label is in place on the drum. See attachment I.

3) Place one drum in the transport tray.

WARNING: Transport only one drum of waste solvent at a time.

2. Solidification Procedure

a. Metal Operators, Production Control, shall perform the solidification process. The Operators shall:

1) Obtain a new empty 30 gallon 17-H drum.

2) Using a tape measure and paint stick marker, place two marks in the drum. Measuring from the bottom of the drum, place the marks at 10-1/2 inches and 16-1/2 inches respectively on the inside of the drum.

NOTE: The marks are used as a gauge when adding ingredients to the drum.

3) Place a new empty 55 gallon 17-H drum in the catch basin with "Radioactive Waste" label affixed to one side. See attachment II.

4) Place the marked 30 gallon drum inside a 55 gallon drum.

5) Place a lid on the 30 gallon drum.
6) Fill the void between the drums with dolomite.
7) Remove the lid from the 30 gallon drum.
8) Using an electric solvent pump, transfer 13 gallons of waste solvent from the drum into the 30 gallon drum. Fill to first mark from the bottom of the drum at 10-1/2 inches.
9) Using a water hose, add 6-1/2 gallons of water to the 30 gallon drum. Fill to the second mark from the bottom of the drum at 16-1/2 inches.
10) Using the hand pump equipped with gallon meter, pump 1-1/2 gallons of Envirostone liquid emulsifier into a bucket and add to the 30 gallon drum ingredients.
11) Place the air operated mixer in the 30 gallon drum and clamp it to the outside of the 55 gallon drum.
12) Start the mixer and mix for two minutes.
13) Slowly add 160 lbs. of Envirostone cement to 30 gallon drum with the mixer running.
14) Allow to mix for 10-15 minutes.
15) Stop mixer. Remove it from the drum.
16) Using the highlift, remove the completed 55 gallon drum from the catch basin and place it away from the work area.
17) Allow completed drum to cure for 24 hours before permanently sealing drum.
18) Repeat steps 3 through 16 to continue the solidification process.

3. Drum Packaging and Marking

a. Metal Operators, Production Control, will package the solidified solvents. The Operators shall:

1) Fill the remaining space in the 30 gallon inner drum with absorbent material.
2) Seal the 30 gallon drum with lid, lock ring, and bolt.
3) Fill the remaining space above the 30 gallon drum to the top of the 55 gallon drum with absorbent material.
4) Attach the lid, lock ring, bolt and lock nut to the 55 gallon overpack drum.
5) Torque the bolt and lock nut to 40 lbs. minimum.
6) Weigh each drum for gross weight.
7) Label each drum with the following information in the order given.

NOTE: All stenciling shall be 2" high, contrasting color to background, durable, water and corrosion resistent for the service life of the container.

a) Information stenciled on the lid of drum.
   (1) Point of Origin, "UNC/300".
   (2) Gross weight, "G.W. xxx lbs.".
   (3) Container I.D. number, "I.D.-SP-xxx".

b) Information stenciled on the side of drum.
   (1) Point of Origin, "UNC/300".
   (2) Gross weight, "G.W. xxx lbs.".
   (3) Container I.D. number, "I.D.-SP-xxx".
   (4) D.O.T. hazard class, "ORM-A".
   (5) D.O.T. shipping name, "Tetrachloroethylene".
   (6) D.O.T. Hazardous Material I.D. number, "UN 1897".

NOTE: If the gross weight exceeds 1120 lbs., the words, "Bottom Tier Only" must be stenciled to the side of the drum.

8) Inspect each drum and for the following information:
   a) Drum identification number.
   b) Contents of drum.
   c) Gross weight.
   d) Date of operator inspection.
9) Complete a "Waste Control" form for each drum.
   NOTE: The form will have an assigned number. This number shall be the container I.D. number.
10) Contact a Radiation Technician to survey the drum and complete their portion of the "Waste Control" form.
11) Attach the "Waste Control" form to the drum. See attachment III for example of "Waste Control" form.
12) Give the pink copy of the "Waste Control" form to the Supervisor, Production Control.
13) Transport the drum to an approved storage area designated by the Supervisor, Production Control.

4. Cleanup and Storage of Equipment Used in Solidification Process

a. A Metal Operator, Production Control, shall cleanup the work area. He shall:

1) Seal any open drums of waste solvent.
2) Clean up the catch basin if any spills have occurred, using absorbent material.
   NOTE: Any used absorbent material may be saved in a spare 30 gallon drum and later placed in a solidification drum with other absorbent material.
3) Clean mixer shaft to prevent hardening of material.

4) Place the electric solvent pump and mixer in a spare 55 gallon drum.

WARNING: A Radiation Technician must be contacted and a survey of personnel and equipment taken before leaving the radiation zone.

WP#0096P

SAMPLE

UNC NUCLEAR INDUSTRIES

FUELS MANUFACTURING DEPARTMENT
OPERATING PROCEDURES

Document No.	
UNI-M-57 REV1	
Procedure No. D-411	Page No. 7 of 9
Date Issued 11-12-85	Supersedes Issue Dated NEW

Title
SOLIDIFYING AND PACKAGING OF WASTE SOLVENTS

Issued By
PRODUCTION CONTROL

ATTACHMENT I

CONDITIONAL RADIATION RELEASE

Instructions: _____

_____

_____

_____

_____

Date: _____ By: _____
Radiation Monitoring

BL-6700-133 (10-77)

(Actual size 2" x 4", yellow-in-color)

Review Dates and Initials						

Prepared by / Supervisor	Reviewed by	Approved by
Supervisor 11/12/85	JK Mandall 11-12-85	Manager, Production Control 11/12/85

SAMPLE

UNC NUCLEAR INDUSTRIES

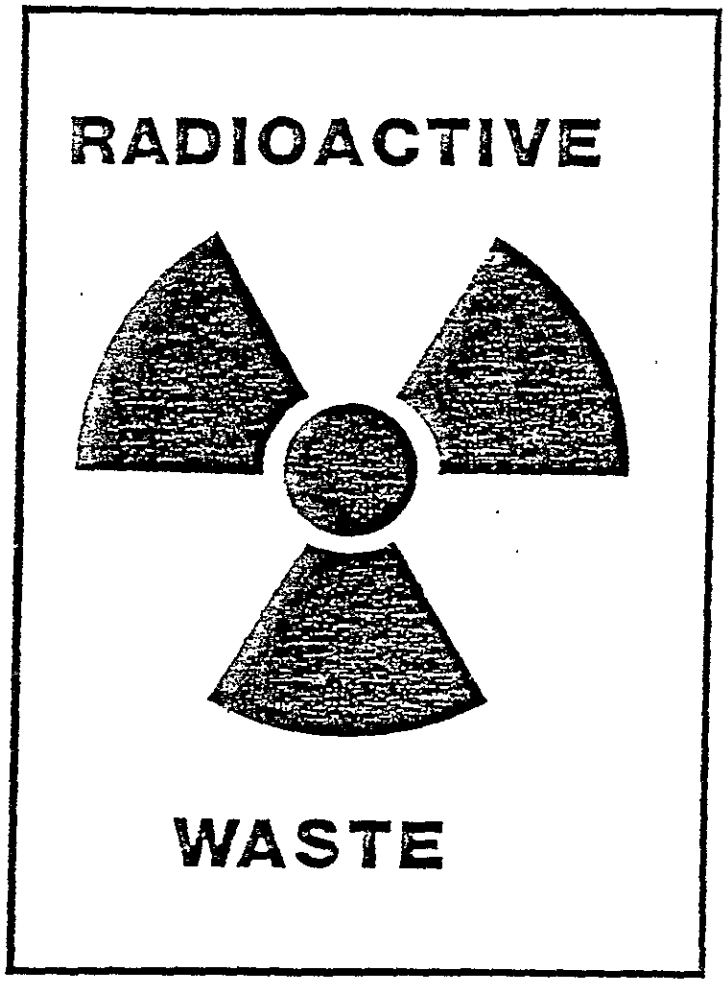
FUELS MANUFACTURING DEPARTMENT
OPERATING PROCEDURES

Document No.	
UNI-M-57 REV1	
Procedure No. D-411	Page No. 8 of 9
Date Issued 11-12-85	Supersedes Issue Dated NEW

Title
SOLIDIFYING AND PACKAGING OF WASTE SOLVENTS

Issued By
PRODUCTION CONTROL

ATTACHMENT II



("Radioactive Waste" label, 5" x 7" in size)

Review Dates and Initials						

Prepared by Bill Steere 11/7/85
Supervisor Kirk Lee 11/12/85

Reviewed by JL Marshall 11-12-85

Approved by
Manager, Production Control 11/12/85

A-5300-285 (3-83)

ATTACHMENT III

Hanford Engineering Development Laboratory

WASTE MANAGEMENT

WASTE CONTROL

☐ HEDL
☐ PNL

Bldg. No.	Room No.	Item No.	Type of Container *	Volume (ft^3) *	Cost Code or Work Order No.

FORM ☐ Liquid ☐ Aqueous ☐ pH 6.0±1 _____ Neutralized By _____ Date
☐ Organic _____ (specify)
☐ Solid ☐ Absorbed Liquid _____ (specify) $\frac{\text{absorber}}{\text{liquid}} = \frac{2}{1}$
☐ Dry Waste _____

TYPE ☐ Fission Products ☐ Uranium ☐ Transuranics (>10nCi TRU/gram)
Nuclides _____ Enrichment _____% Nuclides _____
Activity _____ mCi Weight _____ g Weight _____ mg

VOLUME % COMPOSITION
_____ % Paper _____ % Metal
_____ % Wood _____ % Glass
_____ % Plastic _____ % Animal
_____ % Other (specify)

*Type & Size of Container if not Standard _____ Weight _____ Pounds
Signature of Person Sealing Container _____ Other _____
Print Name _____ Phone No. _____ Date _____

RADIATION SURVEY INFORMATION ON CONTAINER
Max Contact: ☐ <0.5 mrem/hr or _____ mrem/hr at 3' ☐ <0.5 mR/hr or _____ mR/hr
Smearable Contamination: ☐ <2200 d/m/100 cm^2 BETA-GAMMA ☐ <220d/m/100 cm^2 ALPHA
Other: _____ Surveyed by _____ Date _____

54-7200-249 (5-81)

(Actual size 8-1/2" x 5-1/2", 2 copies multicolored)

BURIAL COMPLIANCE CHECKSHEET
FOR RADIOACTIVE SOLID WASTE MATERIAL

SAMPLE

3-1A-7G-1
Rockwell Storage & Disposal Approval Number

6-25 85
Date

Rockwell ~~Solid~~ Waste Processing & Disposal Unit Approval Signature

Waste Generator: UNC Nuclear Industries

Waste Title: Non-Transuranic Contaminated Solidified Perchloroethylene

Storage/Disposal Container: DOT Spec 17C/17H Painted Steel 55 Gal. Drum

Reference: RHO-MA-222, Rev.2 (Unclassified), July 1984, D.P.Belgrair, "Hanford Radioactive Solid Waste Packaging,Storage and Disposal Requirements"

Waste Type:
[ ] Classified
[X] Non-Transuranic
[ ] Transuranic WIPP Certified
[ ] Transuranic WIPP Un-Certified

Disposal Type:
[X] Scheduled
[ ] Non-Scheduled
[ ] One-Time Only
[X] Direct Burial
[ ] Retrievable Storage
[X] Contact Handled
[ ] Remote Handled

Transport Criteria:
[ ] U.S.Department of Transportation
[X] Waste Generator
[ ] Rockwell Transport Approval Number: _____

Transport Category:
[X] Low Specific Activity
[ ] Limited Quantity
[ ] Type A
[ ] Type B
[ ] Highway Route Controlled Quantity

9011707-0117

A. WASTE DESCRIPTION

SAMPLE

3-1A-7G-1
Rockwell Storage & Disposal Approval Number

1. Waste Contents Included:

Yes	No		Yes	No	
[ ]	[X]	Miscellaneous Solid Waste	[ ]	[X]	Tritium
[ ]	[X]	Animal Carcasses	[ ]	[X]	Alkali Metals
[ ]	[X]	Unabsorbed Liquid Organics	[ ]	[X]	Asbestos
[ ]	[X]	Ion Exchange Columns	[ ]	[X]	Lead Shielding
[ ]	[X]	DOT Class B Poison: _____	[ ]	[X]	Gas Generating Potential
[ ]	[X]	Heat Generating Potential (Greater than 0.1 watts/cf)	[X]	[ ]	Hazardous Material Co-contamination

[X] [ ] Other: Solidified Perchloroethylene with Beryllium

Note: The following are prohibited: Free inorganic liquids, incompatible materials, pyrophorics, explosives, unreacted alkali metals, and unvented gas cylinders.

2. Physical Description of Waste:
Perchloroethylene and Beryllium solidified with U.S.Gypsum emulsifier and Envirostone.

3. Radionuclide Activity Description

Non-Transuranic: DOT Low Specific Activity concentrations of Uranium and Beryllium.

Transuranic: Less than 100 nCi/gram waste matrix.

4. Hazardous Material Co-contaminant Description: Perchloroethylene (Tetrachloroethylene) and Beryllium.

5. Maximum Allowable Fissile Quantity: Less than 1 gram/drum

6. Void Space Filler Material: Vermiculite, diatomite or other inert absorbent material.

B. WASTE PACKAGING SYSTEM

SAMPLE

3-1A-7G-1
Rockwell Storage & Disposal Approval Number

1. Container Name: DOT Spec. 17C/17H Painted Steel 55 Gal. Drum

2. Drawing or Specification Number: DOT Specification 17C/17H

3. External Dimensions: 24" OD x 35" H

4. Disposal Volume: 7.4 cf per container

5. Maximum Gross Weight: 1450 lbs.

6. General Description: Steel 55 gallon drum manufactured in accordance with DOT specification 17C or 17H with a gasketed lid. Lid locking ring bolt is torqued to 40 ft-lbs, and a lock nut is installed.

7. Required Internal Packaging: Solidification mixture may be placed directly in 5 to 30 gallon steel containers. Those containers are sealed and surrounded within a 55 gallon drum by absorbent material and the drum sealed.

8. Closure Mechanism: Gasketed lid with locking ring.

9. Maximum Allowable Radiation Levels: Less than 200 mR/hr (Contact); N/A (Other)

10. Maximum Allowable Surface Contamination: Less than 220 d/m/100 sq cm alpha; Less than 2200 d/m/100 sq cm beta-gamma

11. Required Labels:
- -Top and side: Point of Origin (eg.UNC 300)
- -Top and side: Gross Weight (eg. GW XXX LBS)
- -Side only: Radioactive
- -Side only: "BOTTOM TIER ONLY" (Only required if gross weight is 1120 lbs or greater)
- -Side only: Additional DOT Hazard Class (eg. ORM-A)
- -Side only: Additional DOT Proper Shipping Name (eg. Tetrachloroethylene)
- -Side only: Additional DOT Hazardous Material ID Number (eg. UN 1897)

3-1A-7G-1
Rockwell Storage & Disposal Approval Number

12. Returnable Transport Overpacks: None.

Note: The Waste Generator must send a current Certificate of Compliance (COC) and Safety Analysis for Packaging (SARP) for each type of Returnable Transport Overpack to Rockwell prior to the initial shipment and each time these documents are revised.

C. OTHER REQUIREMENTS

1. Administrative Controls: None.

(1) Solidification method shall be as follows: Blend 1/2 gallon of water and 3/4 to 1 pint of U.S.Gypsum emulsifier to each 1 gallon of Perchloroethylene to form a uniform emulsion. Add 10 to 11 pounds of Envirostone per each gallon of perchloroethylene with continuous mixing. Allow mixture to cure for 24 hours before sealing drum.

2. Rockwell Storage/Disposal Instructions:

(1) Waste may be handled by forktruck and stacked.

BURIAL COMPLIANCE CHECKSHEET
FOR RADIOACTIVE SOLID WASTE MATERIAL

SAMPLE

3-1A-7L-1	01-21-86	
Rockwell Storage & Disposal Approval Number	Date	Rockwell Solid Waste Processing & Disposal Unit Approval Signature

Waste Generator: UNC Nuclear Industries
Reference letter #29464 dated 12-16-85

Waste Title: Low Level Solidified Mixed Chemical Waste

Storage/Disposal Container: DOT Spec 17C/17H Painted Steel 55 Gal. Drum

Reference: RHO-MA-222, Rev.3 (Unclassified), August 1985, T.R. Pauly, "Hanford Radioactive Solid Waste Packaging,Storage and Disposal Requirements"

Waste Type:
[ ] Transuranic
[X] Low Level
[X] Unclassified
[ ] Classified

Disposal Type:
[X] Burial
[ ] Retrievable Storage
[X] Scheduled
[X] Contact Handled
[ ] Routine
[ ] Remote Handled
[ ] One-Time Only

Transport Criteria:
[ ] U.S.Department of Transportation
[X] Waste Generator
[ ] Rockwell Transport Approval Number: _____

Transport Category:
[X] Low Specific Activity
[ ] Limited Quantity
[X] Type A
[ ] Type B
[ ] Highway Route Controlled Quantity

9011717 9

A. WASTE DESCRIPTION

SAMPLE

Page 2 of 4

3-1A-7L-1
Rockwell Storage & Disposal Approval Number

1. Waste Contents Included:

Yes	No		Yes	No	
[ ]	[X]	Miscellaneous Solid Waste	[ ]	[X]	Tritium (>20 mCi/M^3)
[ ]	[X]	Animal Carcasses	[ ]	[X]	Alkali Metals
[ ]	[X]	Unabsorbed Liquid Organics	[ ]	[X]	Asbestos
[ ]	[X]	Ion Exchange Columns	[ ]	[X]	Lead Shielding
[ ]	[X]	Significant Concentrations Of C-14, Kr-85, Tc-99, I-129	[ ]	[X]	Gas Generating Potential
[ ]	[X]	Heat Generating Potential (Greater than 0.1 watts/cf)	[X]	[ ]	Radioactive Mixed Waste

[X] [ ] Other: Solidified Mixed Chemical Waste

Note: The following are prohibited: Free inorganic liquids, incompatable materials, pyrophorics, explosives, unreacted alkali metals, and unvented gas cylinders.

2. Physical Description of Waste:
Ethyl acetate and bromine solidified in small metal containers.

3. Radionuclide Activity Description

Non-Transuranic: DOT Low Specific Activity concentrations of various radionuclides including uranium.

Transuranic: Less than 100 nCi/gram waste matrix.

4. Radioactive Mixed Waste Hazardous Constituent Description:
Perchloroethylene, trichloroethylene, trichloroethane, ethyl acetate and bromine.

5. Maximum Allowable Fissile Quantity: Less than 1 gram/drum.

6. Void Space Filler Material: Soil, vermiculite, or other inert materials.

3-1A-7L-1
Rockwell Storage & Disposal Approval Number

SAMPLE

1. Container Name: DOT Spec. 17C/17H Painted Steel 55 Gal. Drum

2. Drawing or Specification Number: DOT Specification 17C/17H

3. External Dimensions: 24" OD x 35" H

4. Disposal Volume: 7.4 cf per container

5. Maximum Gross Weight: 900 lbs.

6. General Description: Steel 55 gallon drum manufactured in accordance with DOT specification 17C or 17H with a 4 mil (nominal) or thicker polyethylene liner and a gasketed lid. Lid locking ring bolt is torqued to 40 ft-lbs, and a lock nut is installed.

7. Required Internal Packaging: Solidification mixture may be placed directly in 1 to 30 gallon steel containers and then sealed. This steel container is then transfered into the polyethylene lined 55 gallon drum. Absorbent material (diatomacious earth) is next added to fill the void spaces within the polyethlyene lined drum. The liner and drum are then sealed.

8. Closure Mechanism: Gasketed lid with locking ring.

9. Maximum Allowable Radiation Levels: Less than 200 mR/hr (Contact)
N/A (Other)

10. Maximum Allowable Surface Contamination: Less than 220 d/m/100 sq cm alpha
Less than 2200 d/m/100 sq cm beta-gamma

11. Required Labels:
-Top and side: Point of Origin (eg.UNC 300)
-Top and side: Gross Weight (eg. GW XXX LBS)
-Side only: Radioactive Materials (DOT or equivalent)
-Side only: Additional DOT Hazard Class label for Corrosive Material
-Side only: EPA Hazardous Waste Stickers as required:
"F003. WT02, Ethyl Acetate"
"D002, DW, Bromine Solution"
"U210, Perchloroethylene"
"U228, Trichloroethylene"
"U226, Trichloroethane"
Use the BCC number for the Manifest Document No.

3-1A-74-1
Rockwell Storage & Disposal Approval Number

12. Returnable Transport Overpacks: None.

Note: The Waste Generator must send a current Certificate of Compliance (COC) and Unloading and Handling Procedures for each type of Returnable Transport Overpack to Rockwell prior to the initial shipment and each time these documents are revised.

C. OTHER REQUIREMENTS

1. Administrative Controls:

(1) The chemical waste mixtures shall be completely solidified and inspected after the curing time for any leached fluid. No free liquids shall be allowed.
(2) Individual Solid Waste Burial Record-Low Level forms are required for each drum. The composition of the waste in volume % shall be indicated.
(3) The name of the hazardous constituents and quantity present must be identified on each corresponding Solid Waste Burial-Record-Low Level form.
(4) The chemicals forming the mixture shall be compatible, that is, must not react dangerously with each other, be decomposed by or ignited by the contaminated waste.

2. Rockwell Storage/Disposal Instructions:

(1) Waste may be handled by forktruck and stacked.

Rockwell Hanford Operations

SOLID WASTE BURIAL RECORD — LOW LEVEL

SAMPLE

USE BLACK BALL POINT PEN OR TYPE

SWBR NO. 343-UNC-86-10 (DO NOT WRITE IN THIS SPACE) (37)

DISPOSAL SITE

This portion of form to be completed by Rockwell Representative at Disposal site.

Area	Burial Ground No.	Trench No.
200 West	218 W 3 AE	10E

Caisson No.: N/A

Beginning Coordinates: N 45804 W 76627

Ending Coordinates: N 45804 W 76635

Remarks: 10E

Signature - Acceptance: Bruce A Rogers — Date: 2-28-1986

Signature - Burial: — Date:

WASTE GENERATOR: UNC

Charge Code: U3-86-W-090 — DOE Authorization No. (RRM): N/A

Address/Phone: 313/300 Area 376-3518

I certify that: 1. No capital property is included in this burial unless documented by a Property Disposal Request and described below. 2. The waste package description below is complete and the waste package conforms to RHO-MA-222 and the approved Burial Compliance Checksheet (BCC). 3. The charge code is correct.

Signature: Jerry M. Bishop — Date: 2-28-86

WASTE DESCRIPTION

COMBUSTIBLE MATERIALS		NONCOMBUSTIBLE MATERIALS	
Paper Products	%	Glass	%
Plastic	%	Concrete	%
Cloth	%	Stainless Steel	%
Rubber	%	Other Metals	20 %
	%	Absorbent	20 %
	%	Solid Solvent	60 %
	%		%
	%		%
Total	%	Total	100 %

HAZARDOUS/CORROSIVE CONSTITUENTS

Name	Quantity (Lb or Kg)
Perchloroethylene	7,980 lbs
Trichloroethane	1,995 lbs

CONTAINER INFORMATION

Quantity & Name: 57 55 Gallon Drums; ___ Hanford Standard Fiberboard Boxes (18" x 18" x 24"); ___ Other: ___

BCC Approval Number: 3-1A-7L-1

Dose Rate - Package: 2.5 mrem/hr at Contact

Diameter or Length x Width: 24" OD

Height: 35"

Material of Construction: Steel

Nuclear Transaction No.: N/A

Property Disposal Request No.: N/A

Total Volume: 427.5

Gross Weight: 34,200 ☒ Pounds ☐ Kilograms

WASTE CATEGORIES: ☐ BW ☒ DS ☐ CE ☐ SS ☐ DD ☐ NC

Thermal Power: ☒ 0.1 w/ft³ or less ___ Other

Remarks: 86-W-090

RADIOACTIVE MATERIAL CONTENT

TRANSURANIC AND URANIUM			NONTRANSURANIC	
Element	Isotopic Distribution (Wt %)	Total Element Weight	Isotope	Grams or Curies
U 235	.95	4.30 grams	NONE	NONE
U 238	99.05	449.29 grams		
Totals		453.59 grams		NONE

Measurement Method: Calculation

Determined By: J. M. Bishop

DISTRIBUTION: White - SWPDU 2750-E/200 E; Canary - TFS 272-W/200 W; Pink - Return to Shipper 200 W

54-3000-581 (7-85)

FUELS MAINTENANCE WORK AUTHORIZATION 030

SAMPLE

Job Title	Date	W.A. No.
Disposition of Solvent Evaporator	10/30/85	85-2510

Originator	Section	Building
J. K. Marshall	Process Engineering	3707D

Description Of Work: The load lugger which was used as the waste solvent evaporator; located east of the 334 building, needs to be cut up and placed in a 4' x 4' x 8' burial box to be supplied by Production Control.

CAUTION: The high temperatures involved in cutting the load lugger may break down the chlorinated solvents into phosgene gas. See attached Hazard analysis for special instructions.

How Discovered:

Cost Center	Activity Task	J.R. No.
HF-600	F3-02	U-09528

Equipment No.	OAL	Priority	Procedure No.
SOLE00		1 2 3	HAZARD ANALYSIS - (ATTACHED)

REVIEWED BY:				APPROVED BY:
Fuels Engineering	Industrial Safety	Fuels Quality Assurance	Other	Fuels Maintenance
J. Marshall	L. Herbert 12/4/85	12/5/85	N/A	W. H. Clark 12-17-85

Fuels Production/Production Control Supervisor Signatures:

Equipment Released		Equipment Accepted	
Name	Date	Name	Date
12/17		J K Marshall	3-5-86
Name	Date	Name	Date
Name	Date	Name	Date
Name	Date	Name	Date

Material Location:
Bldg. No.
Bin No.

Tagout Nos.:

Fuels Prod./Prod. Control	Fuels Maintenance
N/A	N/A

Work That Was Done:
Explain: CUT UP LOAD LUGGER + ALUMINUM LID FOR DISPOSAL. Deem 3-4-86
ASSISTED HANDLING OF CUT UP PIECES RHODES
VARGAS
2-4-86

How Failed:

Post Repair Testing Requirements: CONTACT J. K. MARSHALL FOR ACCEPTANCE

Work Completed:
Fuels Maintenance Supervisor Signatures:
Name: [signature] Date: 3-5-86
Name: Date:
Name: Date:

BC-5300-306 (6-84)

WA 85-2510

SAFETY ANALYSIS CHECKLIST

Document or Procedure Number and/or Title: Disposition of Solvent Evaporator SAMPLE

Location: Adjacent to 334 Building

Description of Job: Cut up the load lugger used for storage of waste solvent and place in a 4' x 4' x 8' burial box.

RISK LEVEL EVALUATION

	Minor (Control Factor 1-7)	Moderate (Control Factor 1-4)	Major (Control Factor 1-2)
Personal Injury		2	
Equipment Damage	NA		
Violation of Nuclear Safety Specification	NA		
Fire from Pyrophoric Metals	NA		
Environmental Release	NA		

Specific Hazards Identified:

Evaluator: J. K. Marshall JK Marshall Date: 11/1/85

Approvals: [signature] Date: 11/8/85

Date:

Date:

Date:

ATTACHMENT I

WA-85-2510

HAZARD ANALYSIS CHECKLIST

SAMPLE

Document or Procedure Number and/or Title: Disposition of Solvent Evaporator

Location: Adjacent to 334 Building

Description of Job: Cut up the load lugger used for storage of waste solvent and place in a 4' x 4' x 8' burial box.

Potential Associated Hazards*

toxic chemicals release	Yes (1)	radiological work	No (2)
flammables/explosives	No	high temperature	Yes (3)
asbestos material	No	hazardous atmosphere	Yes (1)
nuclear safety	No	pyrophoric material	No
solid, liquid or gaseous release to the enrivonment	Yes (1)	Electrical Shock	No
rotating equipment	No	Use of Compressed Air Welding (eye protection)	No

*Indicate "Yes" or "No" for each hazard item. If "Yes" the special instruction section shall indicate how that hazard is to be controlled.

Special Instruction: (Including Protective Clothing Requirements)

(1) See attached sheet. (2) Radiation Monitoring has investigated and ruled that an RWP is not necessary. (3) Use proper caution in operation of cutting torch.

Hazard Level Evaluator J. K. Marshall J K Marshall Date: 11/1/85

Approval: [signature] Date: 11/8/85

Section Manager

9011270116

WA 85-2510

Hazard Analysis Checklist, Page 2

(1) Although the solvent evaporator has been cleaned as thoroughly as possible, some residual perchloroethylene and 1, 1, 1- trichloroethane most likely is present on the load lugger. These solvents can break down at high temperatures into phosgene, a poisonous gas. To protect the cutting torch operator, a full face hood with supplied air is required.

A Rockwell safety group at 200W area has been contacted that can supply a fresh air hood with a welding visor attachment. Since a specific hose type and air pressure is required to use with this hood, Rockwell will also supply an air bottle and cart. Please call one of the Rockwell safety engineers at 3-3761 to schedule use of this system. They will deliver it and provide instruction on its use.

TJE.

INTERNAL WORK ORDER 20^{00}/HR - 1 MAN OJT

UNC NUCLEAR INDUSTRIES SAMPLE

INDUSTRIAL SAFETY MANUAL

Document No.	Control No.
UNI - M - 38	110
Date Issued: 6-85	Page No.: 3 of 3
Supersedes Issue Dated: 12-83	

Subject: HAZARDOUS WORK PERMITS

Issued By: INDUSTRIAL SAFETY

APPENDIX A

Area 300 Bldg. 394A Date 3-4-86 Shift Day

Description of Job _____

Associated Hazards

Yes	toxic chemicals	No	one person lifting over 90 lbs.
No	electrical	No	elevated work area
No	flammables/explosives	Yes	high temperature
No	confined space	No	excavation
No	asbestos	Yes	hazardous atmosphere
			other _____

Protective Equipment Requirements

____ canvas gloves	____ shoe covers	____ ear protection
____ rubber gloves	____ rubber boots	✓ full face mask
✓ coveralls	____ chemical goggles	✓ supplied air resp.
____ acid suit	____ face shield	____ safety belt/harness
____ hood	✓ safety glasses	____ other _____

Special Instructions:

Approvals: W R Peterson — Job Supervisor

L C Horwood 3/3/86 — Industrial Safety

Signatures of Personnel Assigned

Name	PR #	Date(s) worked
[illegible]	55552	3-4-86
[illegible]	54716	3/4/86

Return this form to Industrial Safety upon completion of job.

A-5400-206.2 (6-82)

TITLE DISPOSITION OF SOLVENT EVAPORATOR · W/A NO. 85-2571C

PETERSON 3-3

SAMPLE

RESPONSIBLE PARTY	PROCEDURES REQUIRED
ENGINEER	EFDA N/A
	FRRR FORM N/A
PLANNING & SCHEDULING/ ENGINEERING	DETAILED WORK SEE HAZARD ANALYSIS
	PROCEDURES SEE HAZARD ANALYSIS
SUPERVISOR	TAG OUT N/A
	RWP N/A
	HAZARD ANALYSIS YES ATTACHED
	Be PERMIT N/A
	BURNING/WELDING PERMIT YES
	WELD ROD SLIP N/A
MAINT. ANALYST (ROUTE FOR APPROVALS ONLY)	EXCAVATION PERMIT N/A
QUALITY ASSURANCE	* HOLD POINTS NO MEA 12-11-85
	* INSPECTION SHEET NO MEA 12-11-85

MATERIALS REQUIRED

FM MATERIALS	CERT'S REQUIRED N/A
	ACCEPTANCE DOCUMENTS (GREEN TAGS) N/A
QUALITY ASSURANCE	SPECIAL HANDLING

* REQUIRES QA DETERMINATION

T. T. Elliott — PLANNING & SCHEDULING SIGNATURE

12/2/85 — DATE

BURIAL COMPLIANCE CHECKSHEET
FOR RADIOACTIVE SOLID WASTE MATERIAL

SAMPLE

3-5B-1A-1
Rockwell Storage & Disposal Approval Number

2/08/94
Date

P. J. Davis
Rockwell Solid Waste Processing & Disposal Unit Approval Signature

Waste Generator: UNC NUCLEAR INDUSTRIES
Reference Letter # N/A Dated File #15

Waste Title: Low Level Miscellaneous Radioactive Solid Waste

Storage/Disposal Container: UNC 4X4X8 Plywood Box

Reference: RHO-MA-222, Rev.3 (Unclassified), August, 1985, T. R. Pauly, "Hanford Radioactive Solid Waste Packaging, Storage and Disposal Requirements"

Waste Type:
[ ] Transuranic
[X] Low Level
[X] Unclassified
[ ] Classified

Disposal Type:
[X] Burial
[ ] Retrievable Storage
[X] Scheduled
[X] Contact Handled
[ ] Routine
[X] Remote Handled
[ ] One-Time Only

Transport Approval:
[ ] U.S.Department of Transportation
[X] Waste Generator
[ ] Rockwell Transport Approval Number: _____

Transport Category:
[X] Low Specific Activity
[X] Limited Quantity
[X] Type A
[ ] Type B
[ ] Highway Route Controlled Quantity

9311170199

3-5B-1A-1
Rockwell Storage & Disposal Approval Number

SAMPLE

1. Waste Contents Included:

Yes	No		Yes	No	
[X]	[ ]	Miscellaneous Solid Waste	[ ]	[X]	Tritium (>20 mCi/cu. M)
[ ]	[X]	Animal Carcasses	[ ]	[X]	Alkali Metals
[ ]	[X]	Unabsorbed Liquid Organics	[X]	[ ]	Asbestos
[ ]	[X]	Ion Exchange Resins	[ ]	[X]	Lead Shielding
[ ]	[X]	Significant Concentrations of C-14, Kr-85, Tc-99, I-129	[ ]	[X]	Gas Generating Potential
[ ]	[X]	Heat Generating Potential (Greater than 0.1 watts/cu. ft.)	[ ]	[X]	Radioactive Mixed Waste
[ ]	[X]	Other: _____			

Note: The following are pronibited: Free inorganic liquids, incompatible materials, pyrophorics, explosives, unreacted alkali metals, and unvented gas cylinders.

2. Physical Description of Waste: May include asbestos and miscellaneous solid radioactive waste including paper, cloth, plastic (polyethylene, wood, steel concrete, soil, piping, tools, ductwork, etc.

3. Radioactive Material Description

Non-Transuranic: Up to and including DOT Type A quantities of various radionuclides including mixed activation and fission products.

Transuranic: Less than 100 nCi/gram waste matrix.

4. Radioactive Mixed Waste Hazardous Constituent Description:

None

5 Maximum Allowable Fissile Quantity: 15 grams per container.

6. Void Space Filler Material: Soil, vermiculite or other inert material.

3-5B-1A-1
Rockwell Storage & Disposal Approval Number

SAMPLE

1. Container Name: UNC 4'X4'X8' Plywood Box

2. Drawing or Specification Number: H-1-42701

3. External Dimensions: 8'L x 4'W x 4'5-1/2" H

4. Disposal Volume: 143 cu ft per container

5. Maximum Gross Weight: 2000 lbs

6. General Description: Wooden box constructed of 3/4" fire-retardent plywood with 2x4 inner framing and glued and nailed joints, and 1 1/4" wide steel banding. Box is mounted on 4X4 wood skids for forktruck handling.

7. Required Internal Packaging: None required.

8. Closure Mechanism: Box lid is glued and nailed in place, and steel banding is installed.

9. Maximum Allowable Radiation Levels: Less than 200 mR/hr (Contact)
Single points to 1 R/hr with (Other)
Administrative controls on page 4

10. Maximum Allowable: Less than 220 d/m/100 sq cm alpha
Surface Contamination: Less than 2200 d/m/100 sq cm beta-gamma

11. Required Labels:
Top and side: - Point of Origin (eg. UNC 100N)
- Gross Weight (eg. GW XXX lbs)
Side only: - Dot or equivalent "Radioactive Material"
-Container ID (eg. H-1-42701)
-Grams Fissile Material (only required if 1 gram or more is present)

Rockwell Storage & Disposal Approval Number

SAMPLE

11. Required Labels (continued): If asbestos is present mark 2 sides with

CAUTION
Contains Asbestos
Avoid Opening or
Breaking Container
Breathing Asbestos is Hazardous
to your Health

12. Returnable Transport Overpacks: None

C. OTHER REQUIREMENTS

1. Administrative Controls:

(1) The container shall be inspected to assure there has been no breach of containment during loading.
(2) Containers with "hot spots", i.e. greater than 200 mR/hr and up to 1 R/hr, on one side and/or container bottom must have hot spots on sides marked, and container shall be loaded such that side with hot spots remains opposite from fork-truck operator during unloading.
(3) Containers with hot spots on more than one side shall be pre-rigged for crane unloading and shall not be sent in the same shipment with forktruck unloaded or other contact handled containers.
(4) Rockwell shall be notified of containers with hot spots during scheduling for disposal.
(5) A single Solid Waste Burial Record-Low Level form (Rockwell form 54-3000-581) may be used for containers with like contents in the same shipment.

2. Rockwell Storage/Disposal Information:

(1) Waste may be handled by forktruck or crane (depending upon radiation levels) and may be stacked.
(2) Use other containers to shield those with hot spots.
(3) Backfilling should be completed prior to accumulating 180 grams fissile material in the trench or as required by applicable procedures and specification.

SAMPLE

Rockwell Hanford Operations

SOLID WASTE BURIAL RECORD – LOW LEVEL

37

RSR 470.34

USE BLACK BALL POINT PEN OR TYPE

SWBR NO. 313-UNC-86-4 (DO NOT WRITE IN THIS SPACE)

DISPOSAL SITE

This portion of form to be completed by Rockwell Representative at Disposal site.

Area	Burial Ground No.	Trench No.
200 W	3-A-E	5-E

Caisson No.: N/A

Beginning Coordinates: N 46184 W 76592

Ending Coordinates: N 46186 W 76600

Remarks:

Signature - Acceptance: G.E. Quigley — Date: 7-14-86

Signature - Burial: R.W. Lidderdale — Date: 7-14-86

WASTE GENERATOR: UNC

Charge Code: U3-86-W-237 — DOE Authorization No. (RRM): N/A

Address/Phone: 313/300 Area 376-3518

I certify that: 1. No capital property is included in this burial unless documented by a Property Disposal Request and described below.
2. The waste package description below is complete and the waste package conforms to RHO-MA-222 and the approved Burial Compliance Checksheet (BCC).
3. The charge code is correct.

Signature: J. M. Bishop — Date: 7-11-86

WASTE DESCRIPTION

COMBUSTIBLE MATERIALS		NONCOMBUSTIBLE MATERIALS	
Paper Products	10 %	Glass	%
Plastic	20 %	Concrete	%
Cloth	%	Stainless Steel	%
Rubber	%	Other Metals	20 %
Wood	40 %	Absorbent	10 %
	%		%
	%		%
	%		%
Total	70 %	Total	30 %

HAZARDOUS/CORROSIVE CONSTITUENTS

Name	Quantity (Lb or Kg)
N/A	N/A

CONTAINER INFORMATION

Quantity & Name: ___ 55 Gallon Drums; ___ Hanford Standard Fiberboard Boxes (18" x 18" x 24")

10 ea Other: 4'x4'x8' Burial Box

BCC Approval Number: 3-56-1A-0

Dose Rate - Package: 4.5 mrem/hr at Contact

Diameter or Length x Width: 4' x 8'

Height: 4'

Material of Construction: Plywood

Nuclear Transaction No.: N/A

Property Disposal Request No.: 86-577

Total Volume: 1,280 Cu ft

Gross Weight: 20,000 ☒ Pounds ☐ Kilograms

WASTE CATEGORIES:

☐ BW ☒ DS
☐ CE ☐ SS
☐ DD ☐ NC

Thermal Power:

☒ 0.1 w/ft³ or less
___ Other

Remarks:

Charge this burial to W.O. # B27580-FN01

RADIOACTIVE MATERIAL CONTENT

TRANSURANIC AND URANIUM			NONTRANSURANIC	
Element	Isotopic Distribution (Wt %)	Total Element Weight	Isotope	Grams or Curies
U 235	.95	4.3 grams	NONE	NONE
U 238	99.05	449.24 grams		
Totals		453.54 grams		NONE

Measurement Method: Calculations

Determined By: J. M. Bishop

DISTRIBUTION: White - SWPDU 2750-E/200 E
Canary - TFS 272-W/200 W

54-3000 581 (8/

9011170119